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WIND IN THE SOUTHWESTERN GREAT PLAINS

Conservation Research Report No. 6

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WIND IN THE SOUTHWESTERN GREAT PLAINS

By Wendell C. Johnson, *Soil and Water Conservation Research Division, Agricultural Research Service*

INTRODUCTION

The purpose of this report is to assemble information about wind in the southwestern Great Plains for use by specialists in advising farmers and ranchers. In this report the southwestern Great Plains is considered to be that part of the Great Plains west of the 100th meridian, or west of the eastern edge of the Texas Panhandle, extending from southern New Mexico to the Nebraska Panhandle.

The area has low-growing vegetation and a flat terrain so that wind sweeps over the land surface with little restraint. One climatologist has called the Texas Panhandle and its surroundings the windiest inland area in the United States (*4, p. 6*).[1] Drought, strong winds, and duststorms tend to go together and have been prominent features of the climate of this area in both recorded and prehistoric times (*4, p. 273*).

Despite the important role of wind in its climate, published wind information for the southwestern Great Plains accessible to the farmer has been meager. An early source of information was the "Climatic Summary of the United States," (*8*) published in 1933, which gave for each month of the year the longtime average windspeed and the prevailing wind direction at a limited number of Weather Bureau first-order stations in larger towns. A current monthly publication, "Climatological Data, National Summary," (*12*) contains the average wind velocity and prevailing wind direction for weather stations, mainly at airports, which keep continuous wind records. Another monthly publication, "Climatological Data," (*11*) contains the daily and total monthly wind movement measured at a height of 21 inches above the ground at a few evaporation stations in each State. Even this generalized information has not been available for much of the driest and most sparsely settled portion of the southwestern Great Plains.

Two detailed but not very widely circulated summaries of wind information are also available. In 1941 the Weather Bureau published the "Airway Meteorological Atlas for the United States," (*9*) which utilized observations made at airway weather stations. This atlas has been termed a monumental work made possible only by the methods of the punchcard system (*3*). It contained a much needed tabulation of the frequency of occurrence by months of surface winds classified according to speed and direction based on from 3 to 10 years of records. More recently, in 1957, the Weather Bureau announced the availability of "Climatography of the United States No. 30" (*10*). This publication is a detailed summary of the weather, for a period covering approximately 1950–54, at a limited number of weather stations where hourly weather observations are taken. Wind data are summarized here in much the same way as in the "Airway Meteorological Atlas for the United States." Both of these publications were intended primarily to serve the needs of aviation. Unfortunately the pattern of stations is sparse and much of the data summarized is from the larger air terminals, only a few of which have wind conditions typical of extensive farming areas of the southwestern Great Plains.

In the mid-1950's the increased use of computers made possible the preparation of detailed monthly weather summaries for airway stations located in smaller towns. These summaries are published in the "Local Climatological Data Supplement" (*13*). The wind summary of this publication is in a format similar to that of the "Climatography of the United States No. 30." The availability of the monthly wind summaries in the "Local Climatological Data Supplement" for an increased number of favorably located stations plus the availability on punchcards of previously unsummarized hourly weather observations at other desirable locations suggested the desirability of preparing a 5-year summarization of information on wind intensity, frequency, and direction similar to that of the "Climatography of the United States No. 30" or the "Airway Meteorological Atlas for the United States" for the specific needs of agriculture in the southwestern Great Plains.

A knowledge of the probability of occurrence of strong wind in terms of the different directions and how this relationship changes with time of year is useful to the farmer. This information can help him: (1) In stripcropping; (2) in emergency

[1] Italic numbers in parentheses refer to Literature Cited, p. 23.

tillage for wind erosion control; (3) in placing firebreaks to control grass fires; (4) in locating windbreaks to protect farmsteads; (5) in determining the best time to spray his fields; and (6) in choosing the most desirable orientation of the airstrip from which the spray plane operates. On sandy lands, emergency tillage is usually needed to control wind erosion during the winter months; however, excessive tillage defeats its own purpose by breaking down cloddiness. In this case a knowledge of the variation of the erosion hazard with time of year is valuable. In coping with the wind, the farmer usually relies on experience as a guide. In matters as complex as climate, however, the mental picture of even the most astute observer tends to be an oversimplification biased by a few outstanding experiences. There is no substitute for methodically compiled statistics.

This report, written to compile information about wind in the southwestern Great Plains for use by specialists in advising farmers and ranchers, consists of a description of the sources of information used, a comparison of the climate during two 5-year periods, a presentation of the basic wind data, and a comparison of wind conditions throughout the area.

INFORMATION USED

Local Climatological Data Supplement

Five-year summaries of wind intensity-frequency-direction data by months were prepared by the author, using data from the "Local Climatological Data Supplement" for 11 suitably located airway stations. The 5-year period of record for this group of stations was 1954–58 except for Amarillo, Tex., and Cheyenne, Wyo., for which the years were 1950–54.

Hourly Airway Weather Observations

The Weather Bureau made available hourly airway observations at nine additional stations for 5-year periods covering approximately 1950-54. This information had been placed on punchcards but had not been summarized. The wind observations were machine tabulated in 1960 for the purpose of this report by the National Weather Records Center, Asheville, N.C.[2] The work was done by agreement between the Soil and Water Conservation Research Division of the Agricultural Research Service and the National Weather Records Center of the Weather Bureau.

Time Periods and Stations

The location of the 20 stations selected for study is shown in figure 1. Detailed information about the stations selected and the period and source of record used is given in table 1. The

[2] The writer wishes to express appreciation to Roy L. Fox and Gerald L. Barger (director and deputy director, respectively, of the National Weather Records Center in 1960) for their efforts in locating and making available previously unpublished airway wind observation data.

TABLE 1.—*Stations from which wind data were obtained; height of stations and anemometers; period and source of record*

Station	Station height above m.s.l.	Anemometer height above ground	Period of record	Source of data [1]
	Feet	*Feet*		
Abilene, Tex	1, 753	20	1/54–12/58	LCDS
Akron, Colo	4, 582	30	11/49–10/54	HAWO
Amarillo, Tex	3, 590	43	1/50–12/54	LCDS
Cheyenne, Wyo	6, 131	40	1/50–12/54	LCDS
Childress, Tex	1, 951	36	11/49–10/54	HAWO
Clovis, N. Mex	4, 294	70	11/51–10/56	HAWO
Dalhart, Tex	3, 989	63	11/49–10/54	HAWO
Dodge City, Kans	2, 594	58	1/54–12/58	LCDS
Gage, Okla	2, 191	25	11/49–10/54	HAWO
Garden City, Kans	2, 882	67	11/49–10/54	HAWO
Goodland, Kans	3, 645	31	1/54–12/58	LCDS
Hobbs, N. Mex	3, 650	36	11/49–10/54	HAWO
La Junta, Colo	4, 188	40	11/49–10/54	HAWO
Lubbock, Tex	3, 241	68	1/54–12/58	LCDS
Midland, Tex	2, 862	36	1/54–12/58	LCDS
North Platte, Nebr	2, 779	32	1/54–12/58	LCDS
Rapid City, S. Dak	3, 165	32	1/54–12/58	LCDS
Scottsbluff, Nebr	3, 946	50	1/54–12/58	LCDS
Wichita Falls, Tex	1, 030	[2] 31	1/54–12/58	LCDS
Wink, Tex	2, 807	30	11/49–10/54	HAWO

[1] LCDS = U.S. Weather Bureau Local Climatological Data Supplement. HAWO = Hourly Airway Weather Observations.

[2] 47 feet prior to 2/1/55.

location of the Tucumcari, N. Mex., station is also shown in figure 1. Only limited reference to data from Tucumcari will be made, in the sections on Resultant Winds and Steadiness of the Wind.

The choice of locations and time periods was determined by the data that had been tabulated or that could be tabulated with the resources available, by punchcard methods. The need for machine methods of data processing is apparent when it is considered that about 840,000 individual wind observations have been condensed into the summary tables and figures that appear in this report.

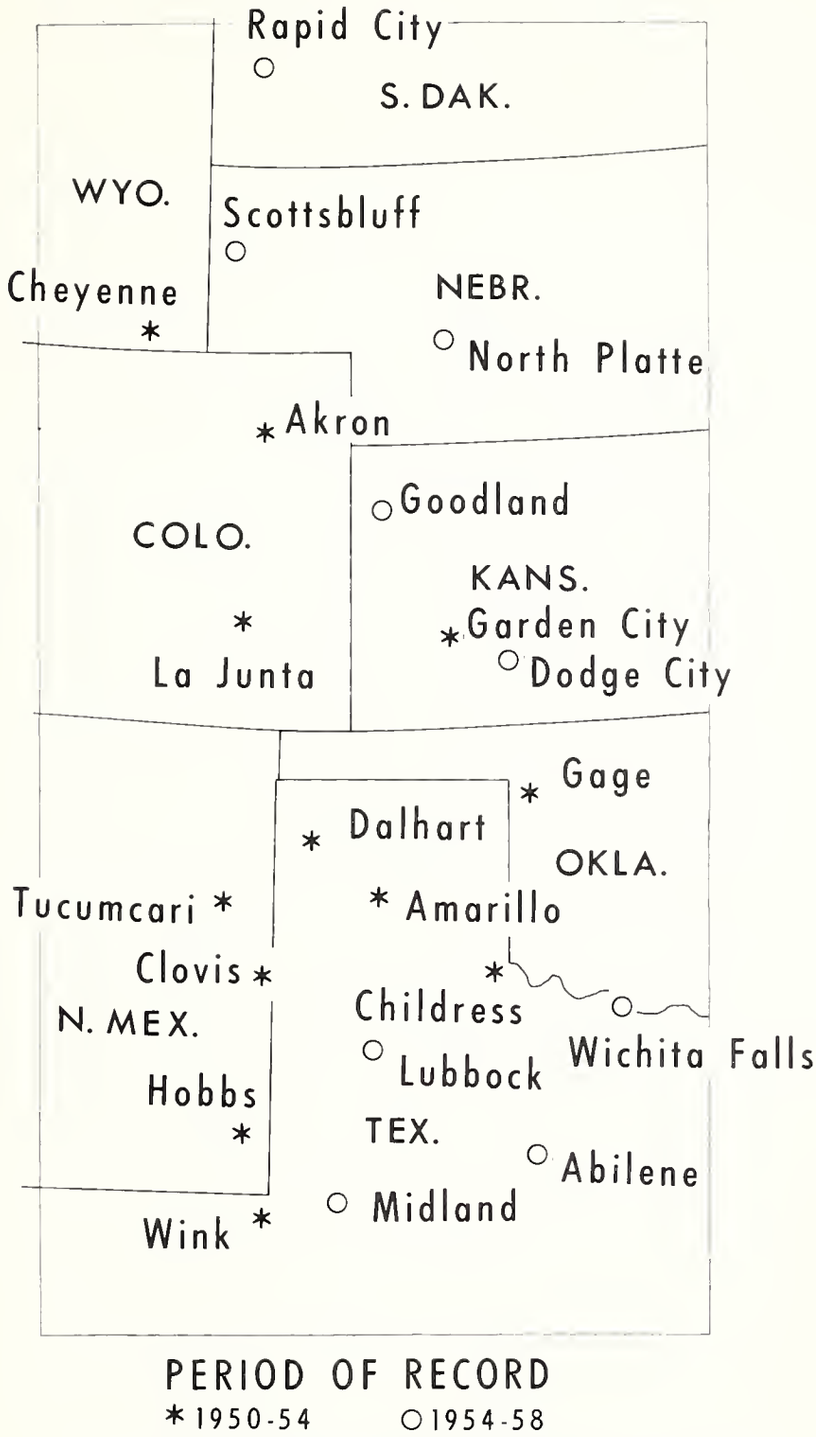


FIGURE 1.—Location of selected airway weather stations and period of record used.

CLIMATE OF THE TWO 5-YEAR PERIODS, 1950–54 AND 1954–58, COMPARED

Just as there are periods of drought and of favorable rains in the southwestern Great Plains, there are also intervals of abnormally light and strong winds. In general, the strongest winds occur during drought years. This relation is basically due to the fact that during droughts less of the sun's radiant energy is used to evaporate water and more energy must be dissipated as outgoing longwave radiation, from the soil to outer space, to achieve an energy balance. Increased outgoing radiation in dry years is associated with higher-than-average soil temperatures, and above-average soil temperatures in turn result in unusually strong turbulent mixing of the air. As turbulent mixing increases, frictional forces decrease and winds near the ground surface become stronger and gustier. Thus, dry years are likely to be windy years. During droughts, gusty winds, "dust devils," and sudden squalls of strong winds are the rule. The same physical principles that explain the occurrence of strong winds in dry years can be used to explain the daily cycle of windspeed, in which the strongest winds near the ground usually occur in the afternoon when soil temperatures are highest and the lightest winds usually occur during the early morning hours when the soil is coolest.

Since windspeed and the other elements of climate such as temperature and rainfall are related, a regional wind study should consider also the general climatic conditions under which the wind data were obtained. This is especially important in the present study since it has been necessary to use data from two different 5-year periods, 1950–54 and 1954–58. In case we wish to compare wind conditions at the different locations it is necessary to assure ourselves that the general climatic conditions for the two time periods were reasonably comparable. It would not be proper to compare wind observations made at one location during extreme drought with wind observations made at another place during exceptionally rainy conditions.

During the 1940's much of the Great Plains had above-normal rainfall, and wind from the standpoint of soil erosion was not a matter of widespread concern. Dry weather returned in the early 1950's and persisted until early 1957, when the trend was reversed and wet weather replaced drought. This period of deficient precipitation, generally referred to as the 1952–56 drought, was accompanied by unusually strong winds, and serious wind erosion occurred over the southwestern Great Plains. It has been estimated that more land was in a condition to blow in the fall of 1954 than at any previous time (*1, p. 4*). The rainfall-deficient condition began in southeastern New Mexico in 1950 and spread northeastward during the next 2 years to envelop the entire southwestern Great Plains (*6*). Most of the southwestern Great Plains had an accumulated deficiency in precipitation amounting to at least a normal year's rainfall by the end of 1956.

A means of visualizing the fluctuation in climate occurring in the 1950's is afforded by figure 2, which shows conditions near Amarillo, Tex., in the central part of the southwestern Great Plains. The deficiency in rainfall from mid-1951 until the end of 1956 is clearly indicated by the downward trend of the accumulated departure of the precipitation from normal. At the lowest point the accumulated deficiency below normal was 19.1 inches, or about the average amount of precipitation in a year. Beginning in 1957 rainfall became more plentiful, and by the end of 1960 the accumulated rainfall deficiency had disappeared. Naturally, evaporation was high during the dry years. At the end of 1956 the accumulated departure from normal of evaporation from a free water surface was 66.4 inches, or 83 percent of a normal year's amount of evaporation. By the end of 1960 the accumulated excess of evaporation had been reduced to 34 percent of a normal year's amount.

Periods of strong wind and of light wind had a tendency to persist, and months with average windspeeds above or below the 1950–60 average for the month occurred in groups. The 1950–54 period contained: 2 years that could be considered windy, 1951 and 1954; a year with light wind, 1952; and 2 years with near-average wind conditions. The 1954–58 period consisted of 3 years when windspeeds were definitely above normal and 2 years when windspeeds were definitely below normal.

All in all, the amount of wind movement at Amarillo in the two 5-year periods was quite comparable. Although the average wind velocity [3] for most months was slightly less in 1950–54 than in 1954–58, the average velocity of the two periods differed by only 4 percent—12.8 m.p.h. for 1950–54 compared to 13.3 m.p.h. for 1954–58. Partially compensating for the slightly smaller average wind velocity in 1950–54 was the greater number of observations in which it was over 25 m.p.h.—2,260 in 1950–54 compared with 2,084 in 1954–58. Apparently, windspeed was more variable in 1950–54 than in 1954–58. The annual number of observations of winds over 25 m.p.h. for a given average annual windspeed was less during the more humid phase, 1957–60, of the rainfall cycle, than in the drier years, before 1957 (fig. 3).

[3] The words "speed" and "velocity" are used interchangeably in this report. There are many precedents for this practice in climatological literature.

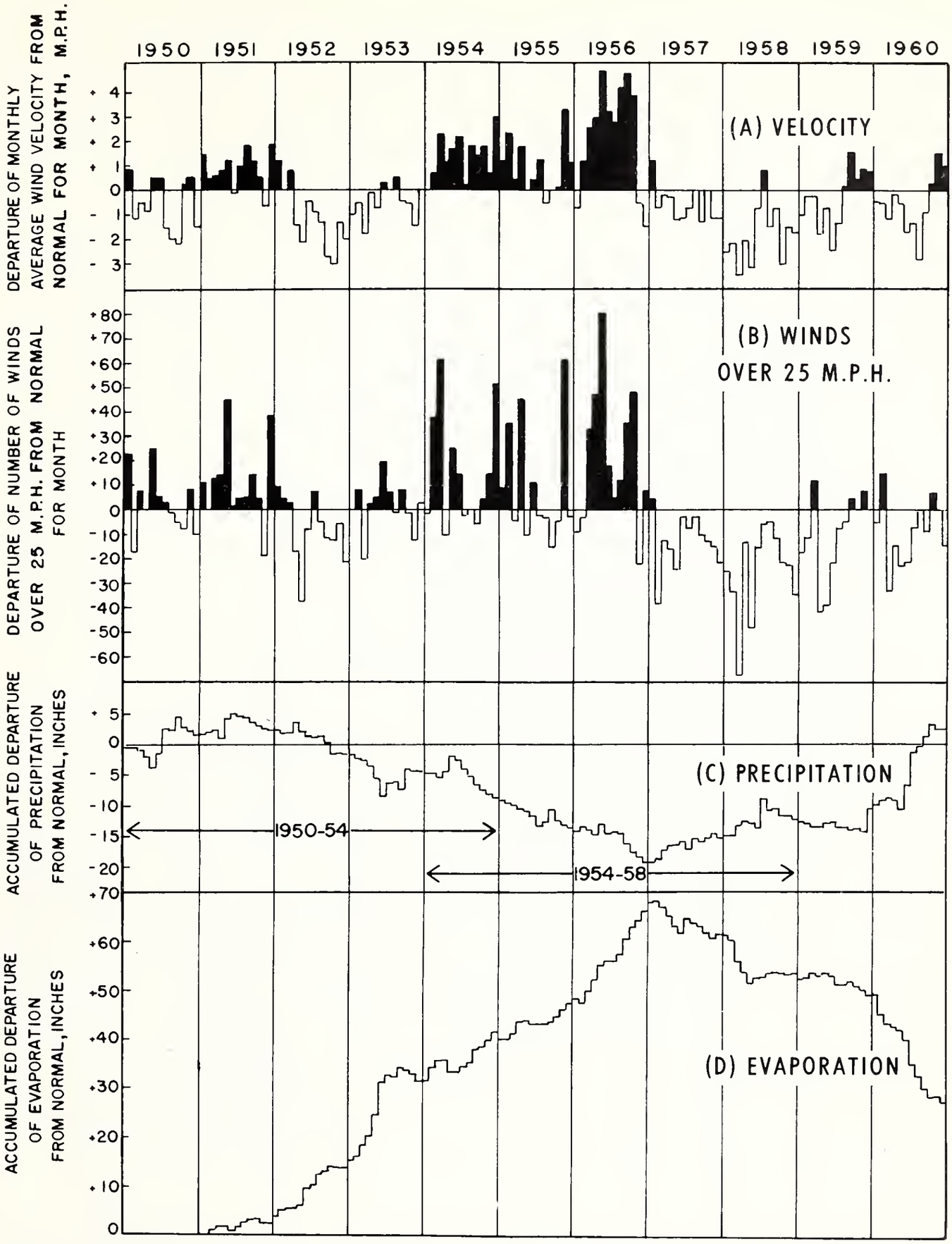


FIGURE 2.—Some features of the climate near Amarillo, Tex., 1950–60: *A*, Departure of monthly average windspeed at Amarillo from 1950–60 "normal" or average for the month; *B*, departure of the number of hourly observations of winds over 25 m.p.h. from 1950–60 normal for the month; *C*, accumulated departure of precipitation from 23-year normal at Southwestern Great Plains Field Station, Bushland, Tex. (near Amarillo), 1950–60; *D*, accumulated departure from longtime normal of evaporation from a free water surface at Southwestern Great Plains Field Station, 1951–60.

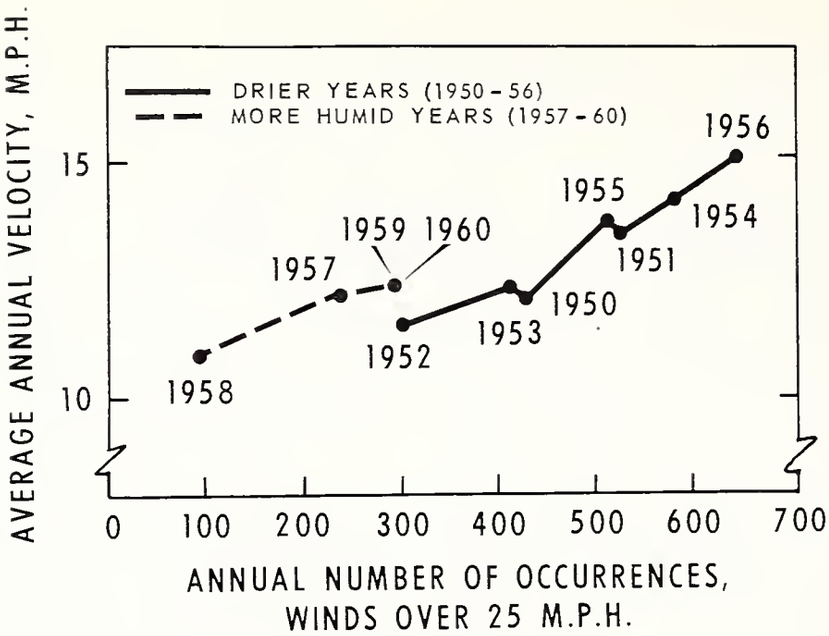


FIGURE 3.—Relation between number of observations of winds over 25 m.p.h. and the average annual windspeed at Amarillo, Tex., in the drier years, 1950–56, and in the more humid years, 1957–60, of the 1950–60 rainfall cycle. (Data points for 1959 and 1960 coincide.)

PRESENTATION OF BASIC DATA

Tabulated Data

The basic data of this report, derived from over 800,000 hourly observations of wind direction and speed, are summarized in tables 5 to 24 in the appendix. Each table relates to a single location, and within a table, information is given for the different months of the year separately. The tables list the percentage of the time that wind occurred in various combinations of direction and speed during the 5-year period of record.

An hourly observation is a routine weather observation, including the wind direction and speed, made once each hour at an airway weather station located along a commercial air route. It is made primarily for the needs of aviation and is disseminated by radio broadcast and by teletype. Since the hourly observation occurs at a fixed time each hour it is an unbiased sample of wind condition. When used in this report the term, "occurrence" or "case," means an individual hourly observation. Also "frequency of occurrence" of some wind property means the fraction of the hourly observations in which that wind property occurred.

In the original hourly observations, wind direction was reported to 16 points of the compass. Each of the 16 direction classes had a range of 22.5°. Space limitation in this report required that the number of direction groupings in appendix tables 5 to 24 be reduced to eight. The reduction

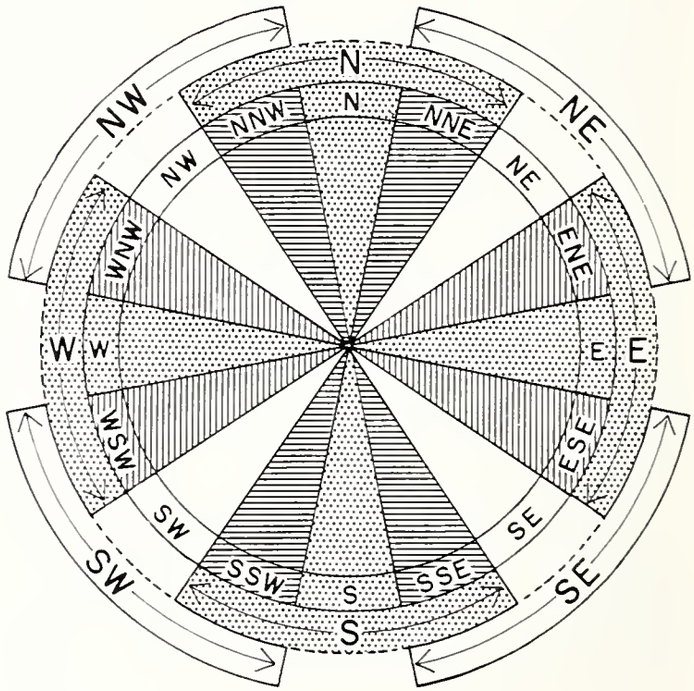


FIGURE 4.—Method used in combining wind direction observations originally taken to 16 points of the compass into 8 direction classes, for summarizing data in appendix tables 5 to 24.

was achieved by combining the original 16 directions into 8 broader, overlapping classes, each

containing 3 of the original directions and having a range of 67.5°. The system of combining directions is illustrated in figure 4.

To illustrate the use of appendix tables 5 to 24, the data for the month of March in appendix table 7 have been reproduced as table 2, in which certain items of information have been set in boldface to make clear the following observations about the wind at Amarillo, Tex.

The wind occurred in March from the south direction (SSE through SSW according to the 16-point direction system, fig. 4) 28.5 percent of the time. The wind was from the southwest (SSW through WSW, 16-point system) direction, in the speed range of 19 to 24 m.p.h., 5.4 percent of the time. The average windspeed from the southwest direction was 17.4 m.p.h., and the average windspeed for the month without distinction as to direction was 15.1 m.p.h. There were a few occurrences of winds over 38 m.p.h. from the southeast, but these totaled less than 0.05 percent of the cases. The frequency of occurence of winds in the 0- to 3- , 13- to 18- , and 25- to 31-m.p.h. ranges was 4.7, 30.9 ,and 7.7 percent of the cases, respectively.

Due to the overlapping of the eight direction classes, the sum of the frequencies of occurrence of wind from the eight direction classes plus the percentage of calms for a month total more than 100 percent. For the same reason, the total frequency of occurrence of wind in any windspeed range regardless of direction is less than the sum of the frequencies of occurrence of wind in that speed range for the eight direction classes.

Wind Polygons

As an aid in visualizing the seasonal changes in the character of the wind at each location, wind polygons depicting conditions during 4 months of the year (December, March, June, and September) are shown for each station (see figs. 21 to 40 in the appendix). The four wind polygons for each location immediately precede the tabular data for that station. Since the wind polygons differ somewhat from the wind roses usually seen in publications dealing with climatology, a specimen polygon for Amarillo, Tex. (fig. 5), for the month of March (taken from fig. 23) will be examined to explain the method of presentation of data.

The number in the circle in the center of the polygon gives the percentage of time the windspeed was 3 m.p.h. or less, which was 4.7 percent of the time. The frequency of occurrence of wind in a given windspeed range is shown by the length of a segment of a radial line representing the direction, with windspeed increasing outward from the center of the polygon. Referring to the wind polygon and the frequency of occurrence scale, one sees that 4- to 7-m.p.h. winds were from the north 0.8 percent of the time. Winds over 4 m.p.h. occurred from the west 7.5 percent of the time; winds over 24 m.p.h. were from the west-southwest 2.4 percent of the time. Note that the directions given in the wind polygons are for 16 points of the compass, as in the original observations, and differ from the 8 broader direction classes used in the tabular data (fig. 4).

TABLE 2.—*Percentage frequency of occurrence of March wind, according to direction and speed, Amarillo, Tex., 1950–54* [1]

Direction	Frequency of windspeed (m.p.h.) of—								Total	Average speed
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38		
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.9	2.2	3.9	4.8	3.8	2.2	0.8	0.1	18.6	15.4
NE	.6	1.8	2.6	2.7	1.3	.6	.2	--------	9.9	13.7
E	.7	1.5	3.2	1.5	.4	.1	--------	--------	7.4	10.7
SE	.6	1.9	5.9	7.5	2.6	.4	.1	+	19.1	13.4
S	.6	2.1	6.6	11.7	5.6	1.6	.4	+	**28.5**	15.5
SW	.5	1.5	4.9	8.6	**5.4**	2.7	1.3	.2	25.2	**17.4**
W	.6	2.3	4.7	4.5	3.5	2.9	1.4	.5	20.6	17.3
NW	.8	2.7	3.3	2.8	1.9	.8	.2	.1	12.6	12.8
Calm	**1.0**	--------	--------	--------	--------	--------	--------	--------	1.0	--------
Total [2]	**4.7**	11.2	24.6	**30.9**	17.2	7.7	3.0	.7	[3] 142.9	**15.1**

[1] Excerpt from appendix table 7 to illustrate use of basic data tables in appendix. Items set in boldface cited in text.

[2] Total frequency of occurrence, from all directions, for the specified windspeed range. Obtained by adding values for 16 points of the compass.

[3] Value greater or less than 150 indicates vagary of sampling or bias in making observations. Since half of the 16 direction classes were used twice when the 16 classes were combined into 8, the total would be 150 if the number of observations were equally divided among the original 16 direction classes.

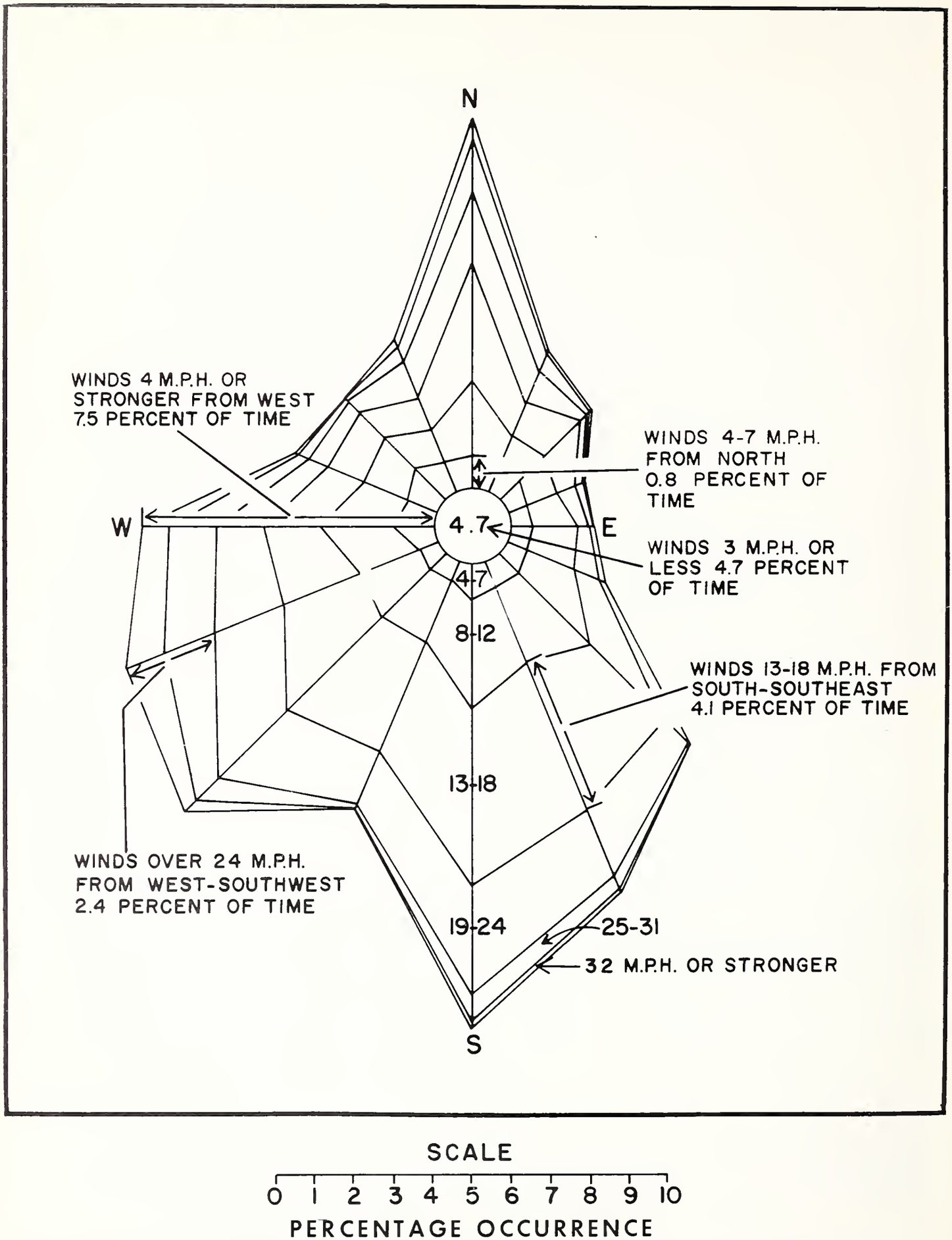


FIGURE 5.—Wind polygon for March at Amarillo, Tex., labeled to illustrate method of presenting data in appendix.

Resultant Winds

The resultant wind is a commonly employed interpretive device that condenses the wind statistics into the simplest possible terms consisting only of a direction and a velocity. A hypothetical simplified case will be used to illustrate the computation and meaning of the resultant wind. Suppose that at a certain location the wind occurred from only four directions and that the average velocities and frequency of occurrence from the four directions were as follows:

Wind direction:	Frequency of occurrence, percent	Average velocity, m.p.h.
N	50	10.2
E	5	6.1
S	30	15.1
W	15	8.2

Multiplying the frequency of occurrence from a given direction by the average windspeed from that direction gives the miles of wind movement per 100 hours (namely 510.0, 30.5, 453.0, and 123.0 for N, E, S, and W winds, respectively). The wind vectors are then plotted in the manner illustrated in fig. 6 and explained in the following paragraph.

If an imaginary parcel of air originating at A were moved successively 510.0 miles to the south, 30.5 miles to the west, 453.0 miles to the north, and 123.0 miles to the east, it would arrive finally at point B, which is 110 miles ESE (east-southeast) of A. The vector, A–B, which is the resultant of the four wind vectors, is thus 110 miles per 100 hours from the WNW (west-northwest, 303°) as indicated by the number and arrow at the right of the diagram. In an actual case, wind observations were made to 16 points of the compass and solution for the resultant wind involved 16 vectors, but the method was the same as shown.

Resultant winds were computed for the months of March, June, September, and December. See figures 7, 8, 9, and 10. Rapid City, S. Dak. is not shown in these figures, but Tucumcari, N. Mex. (1950–54 data) is included. Only in this section and in the section on Steadiness of the Wind, immediately following, are references made to Tucumcari data. (The location of Tucumcari is shown in fig. 1.)

In March, the resultant winds are strongest in the southwestern and northwestern extremities of the region (fig. 7). In the northwest, the direction is from the northwest quadrant; in the southwest it is from the southwest quadrant. In southwestern Kansas and the Oklahoma Panhandle, as the wind polygons indicate, the wind blows about as often from the south as from the north and the magnitude of the resultant wind vector is small. Although March is a month of strong winds, it is a dry month in the southwestern Great Plains. The net movement of the air, as typified by the resultant wind, is small and its source is a land rather than a maritime region.

From March to June the resultant winds undergo a large and significant change. Conditions in in June (fig. 8) are more favorable for the penetration of moist air from the Gulf of Mexico into the

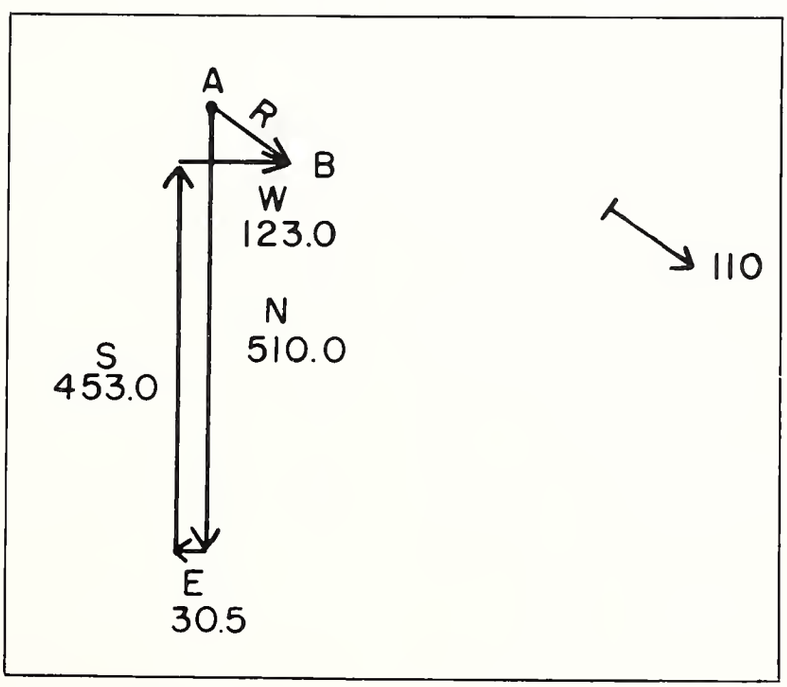


FIGURE 6.—Method of computing resultant wind in miles of wind movement from a certain direction in 100 hours. A=origin; B=terminal point of resultant vector; A–B=resultant wind=R=110 miles/100 hours.

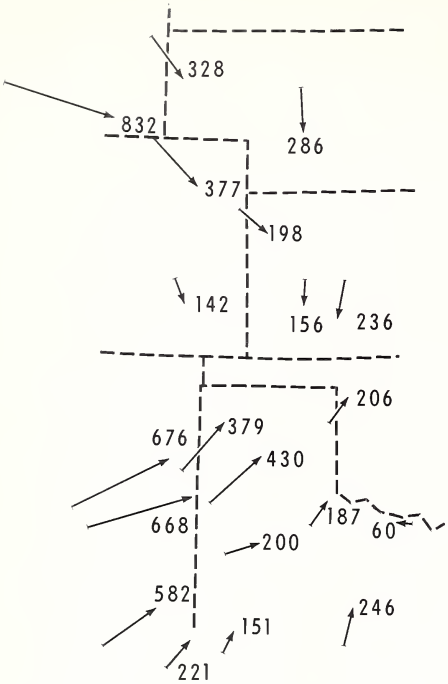


FIGURE 7.—Resultant winds for March. Arrows fly with the wind; numbers indicate miles of wind movement in 100 hours; tip of arrow indicates location of station.

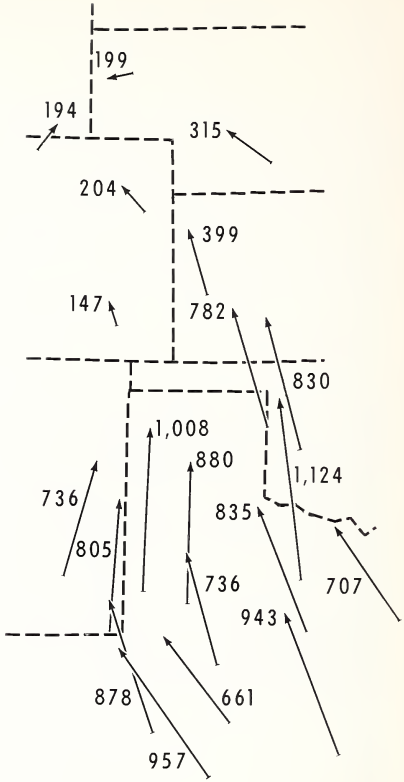


FIGURE 8.—Resultant winds for June. Arrows fly with the wind; numbers indicate miles of wind movement in 100 hours; tip of arrow indicates location of station.

Plains and prospects for precipitation are much improved. Over the southwestern Great Plains, May or June is the rainiest month. Near the New Mexico-Colorado boundary in extreme northeastern New Mexico is an eastward extension of the highlands to the west, which almost reaches the western edge of the Oklahoma Panhandle. In the pattern of the resultant winds there is a suggestion of a diversion of the surface flow around this land barrier. If topography does have a significant effect in diverting airflow in this region, it is a possible cause of the low precipitation that occurs in southeastern Colorado and of the extension of the isohyetal, or equal-rainfall, lines westward from northwestern Kansas into northeastern Colorado, where rainfall is somewhat heavier than in southeastern Colorado. For weather stations in the neighborhood of La Junta, Colo., the average annual precipitation ranges from 12 to 14 inches. Near Akron, Colo., the average annual precipitation ranges from 17 to 18 inches.

In September (fig. 9), although the resultant wind vectors have a pattern similar to that of June, the wind flow is much weaker and the precipitation averages some 35 to 40 percent less. Southerly winds are much less frequent in September than in June and there is a greater tendency for northeast winds.

In December, the resultant winds are westerly (fig. 10). The chances of an east or southeast wind are less in this month than in any of the three previously mentioned months. Prospects for precipitation are poor, although a little better than in January or February.

Steadiness of the Wind

For spatial comparison of complex wind statistics, the resultant wind is very helpful. However, it represents net wind movement and, like any average, is a fictitious rather than an actual quantity. As Conrad and Pollak (*3*) point out, just as the representativeness of an arithmetic

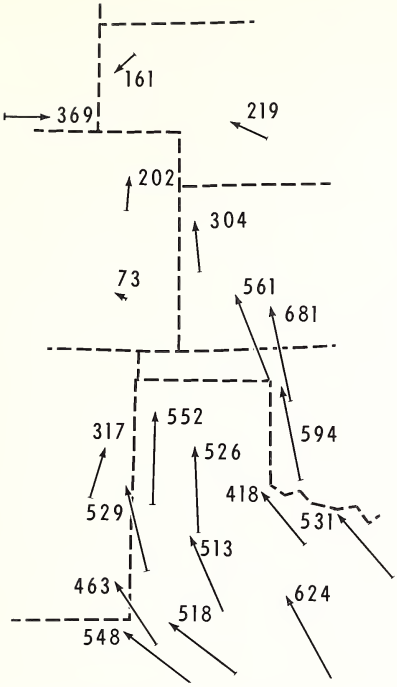


FIGURE 9.—Resultant winds for September. Arrows fly with the wind; numbers indicate miles of wind movement in 100 hours; tip of arrow indicates location of station.

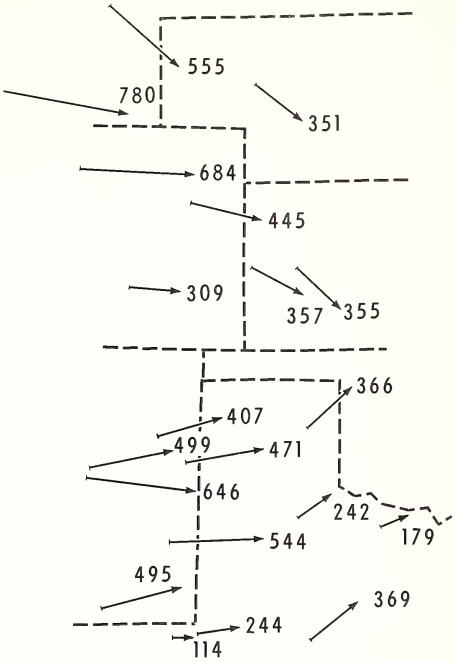


FIGURE 10.—Resultant winds for December. Arrows fly with the wind; numbers indicate miles of wind movement in 100 hours; tip of arrow indicates location of station.

average temperature depends on the variability of temperature, so the representativeness of the average streamlines defined by the resultant wind vectors approaches reality more closely as the steadiness of the wind increases.[4] If the wind blows from a single direction, the best possible agreement between the resultant wind and the actual wind in both velocity and direction results. If, on the other hand, the velocity is constant but the wind occurs half of the time from each of two opposing directions, the resultant wind is a calm and is unrepresentative of actual conditions. The expression "the steadiness of the wind," an index of the representativeness of the resultant wind, is defined as follows (3):

$$\text{Percent steadiness} = 100 \times \frac{\text{resultant wind velocity}}{\text{average wind velocity}}$$

[4] A streamline is a line representing the direction of movement of the air at a certain instant of time. An average or climatological streamline for a given time period parallels the resultant wind vectors for that time period.

The steadiness of the wind for the months March, June, September, and December is shown in figures 11 and 12. The steadiness of the wind in the western half of Kansas and the area to the south is greatest in June and September. In the northwestern part of the region the steadiness is greatest in December and March. The contrast in steadiness of the wind between eastern New Mexico and the Texas Panhandle in the month with the highest percentage of strong winds, March, is very striking. The difference in steadiness of the wind shown for different parts of the southwestern Great Plains in figures 11 and 12 are almost entirely due to differences in constancy of direction. Differences in average windspeed are not associated with differences in steadiness.

Direction of the Stronger Winds

The percentages of the hourly observations of winds 25 m.p.h. and stronger coming from the different directions are shown in figures 13, 14, and 15 for the months of March, June, and December. Wind directions in these three figures are to 16

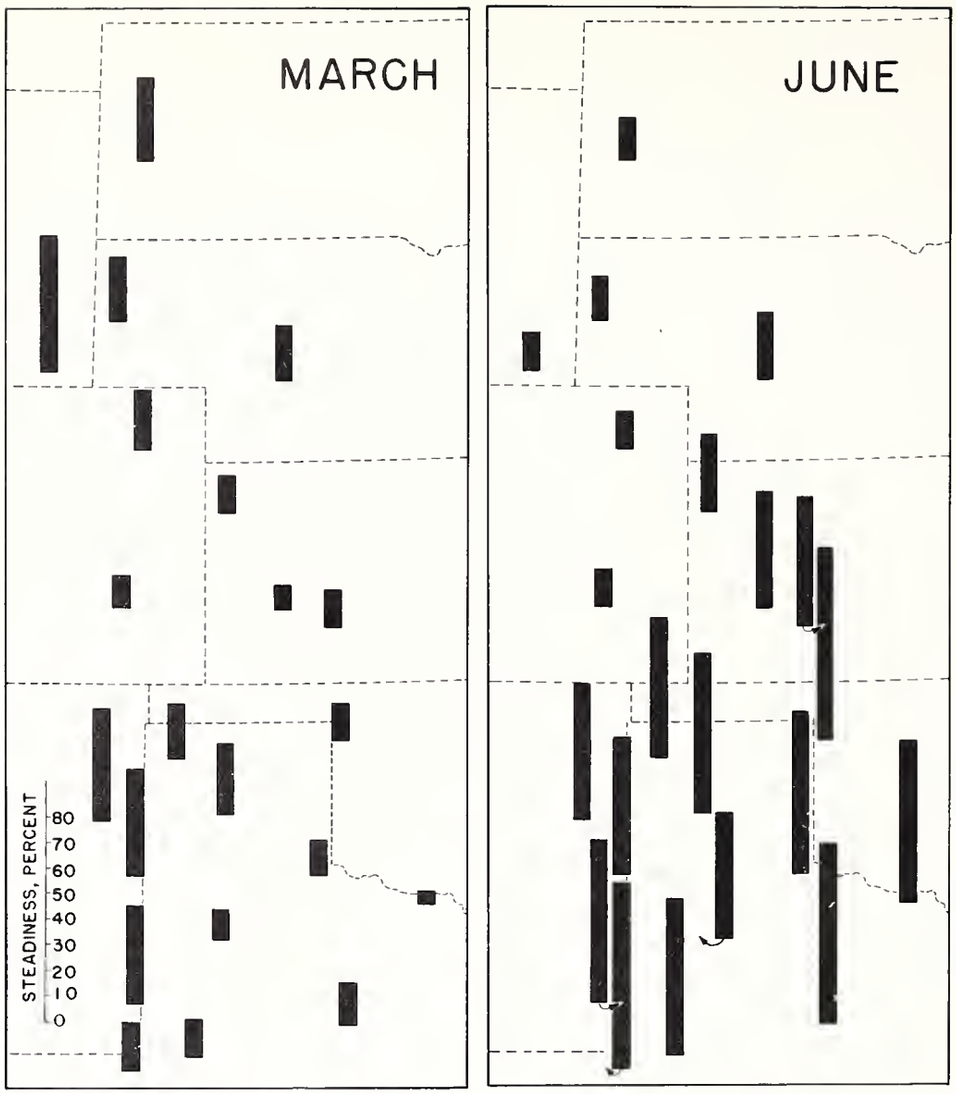


FIGURE 11.—Percent steadiness of wind in southwestern Great Plains during March and June. Base of bar rests on station location except where arrow shows displacement. Scale is used to convert length of bar to percent steadiness.

points of the compass. The windspeed reached 25 m.p.h. so infrequently in September that no figure is included for that month. The reader can extract information from these figures for the months and locations in which he may have special interest.

The anomalous behavior of the wind at La Junta has been mentioned previously, and an explanation based on topography has been suggested. The wind rose from Midland, Abilene, and Wichita Falls, Tex. in the extreme southeast portion of the defined area also do not conform very well to the pattern established by the other stations. Borchert (*2*) has noted that in winter the average position of the west-to-east paths of low pressure areas and hence of a transitional zone between continental and maritime air is located in the general area of these stations. The occurrence of such a transitional zone would help to explain any discrepancies during December and March.

The high frequency of occurrence of the stronger winds from the east at Midland in June also appears anomalous. As will be seen later, winds at Midland are somewhat lighter than at adjoining stations. There was nothing about the exposure of the anemometer at Midland which would serve to explain these discrepancies and no explanation can be offered.

Occurrence of Winds Over 25 m.p.h. by Months

The distribution of the occurrences of winds over 25 m.p.h. during the year is shown in figure 16. There can be little doubt that for the southwestern Great Plains as a whole, March is the windiest month and August has the fewest strong winds. Garden City, Dodge City, Dalhart, and Gage had the most nearly equal distribution of winds over 25 m.p.h. by months.

Regional Differences in Windspeed

Until now little has been said about the variation with location of the strength of the wind in the southwestern Great Plains. Instead, the change with time of year at individual locations in the

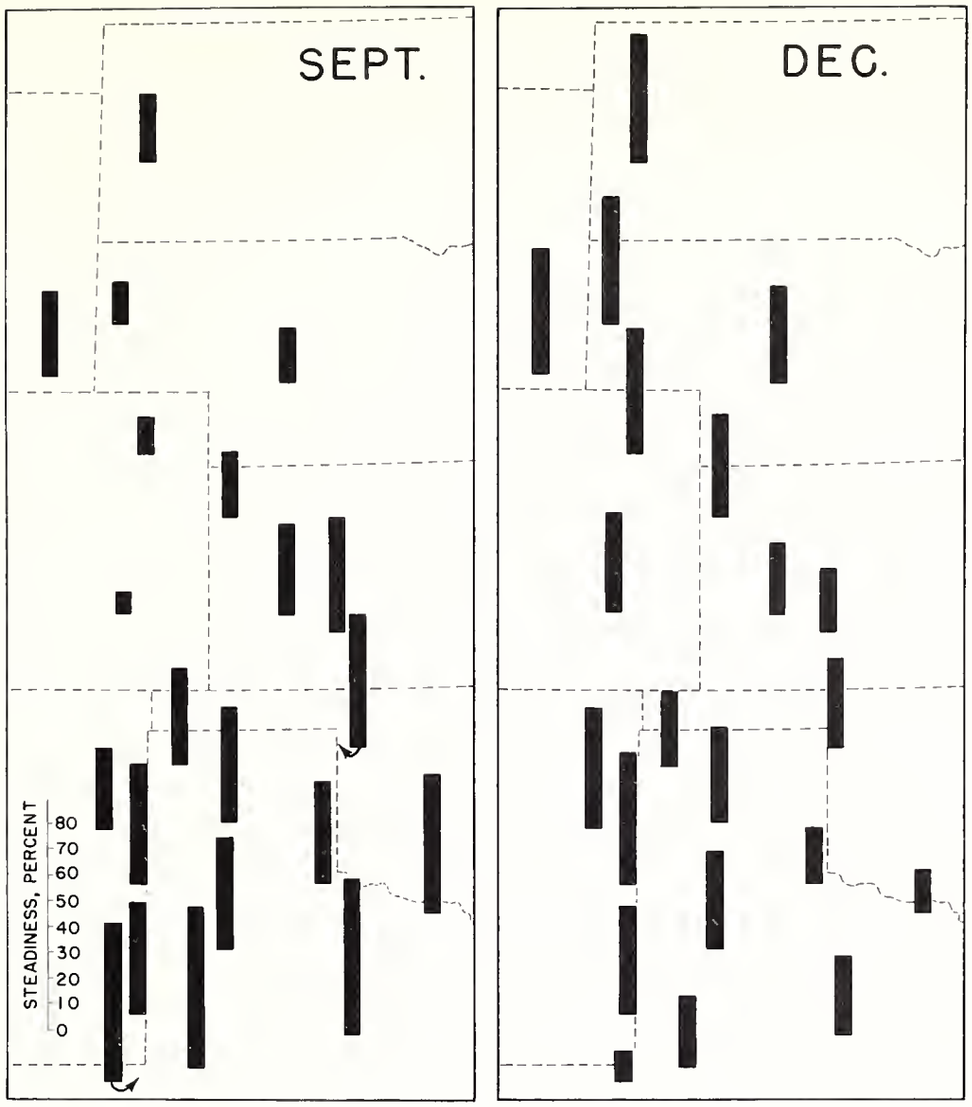


FIGURE 12.—Percent steadiness of wind in southwestern Great Plains during September and December. Base of bar rests on station location except where arrow shows displacement. Scale is used to convert length of bar to percent steadiness.

risk of receiving winds in the various velocity ranges has been stressed. This approach was used because it provides the type of information most useful to the farmer and is best suited to the data available. Nevertheless, the question as to what part of the southwestern Great Plains has the strongest winds has much popular interest and is also considered in this report.

Regional comparisons of windspeed from the data of this report are not easy. First, the period of record used, 5 years, is probably too short to make such comparisons since there are year-to-year fluctuations in wind strength that might not parallel each other at widely separated locations. A second difficulty is the lack of standardization of anemometer heights, which ranged from 20 to 70 feet in the basic group of 20 stations (table 1). Since wind increases with height, all other things being equal, the station with the highest anemometer will appear to have the strongest winds. Therefore, before windspeeds observed at different locations can be compared, the observations must be corrected for differences in anemometer height. In the language of the climatologist, the data must be reduced to a standard anemometer height.

First, the procedure employed to develop velocity-height relations experimentally in a form suitable for use in reducing the data of this report to a standard anemometer height will be illustrated. A regional comparison of windiness will then be made by determining, for a number of Great Plains locations, the percentage of time the wind corrected for differences in anemometer height was in upper speed ranges during March, the windiest month, over a 5-year period of record. For this purpose data from the original basic group of 20 stations listed in table 1 will be supplemented by data from 13 additional stations, and the geographic area considered will be extended to include all of the Great Plains that extends from central South Dakota to southern New Mexico.

In general, windspeed is proportional to the logarithm of height, but the exact manner in which windspeed changes with the logarithm of height depends on air temperature conditions (*5*, *7*). If the logarithm of height is plotted on the ordinate, or vertical scale, of a graph and speed on the abscissa, or horizontal scale, the resulting curve

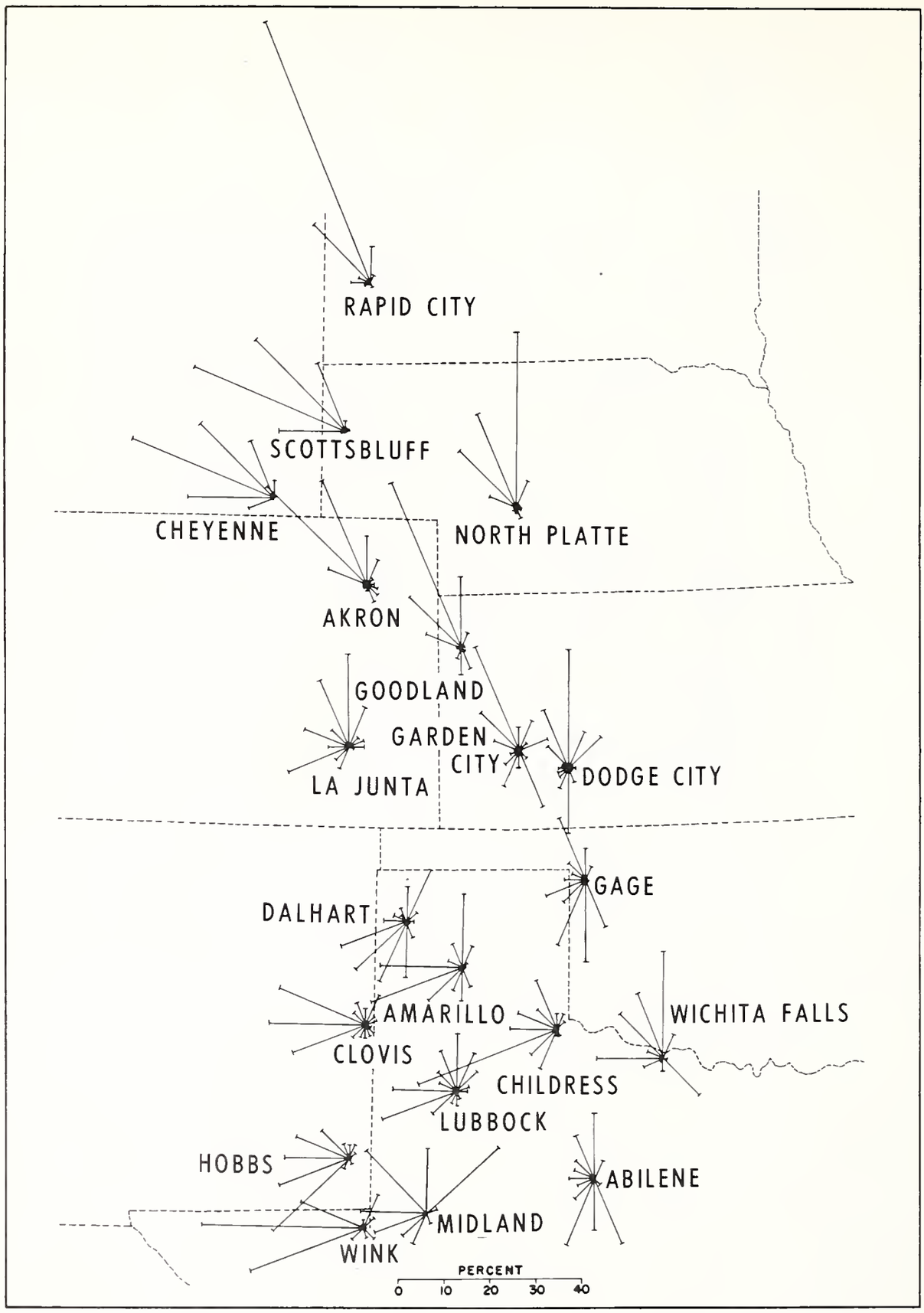


FIGURE 13.—Percentage of hourly observations of winds 25 m.p.h. and stronger from different directions in March. Scale is used to convert length of line to percentage.

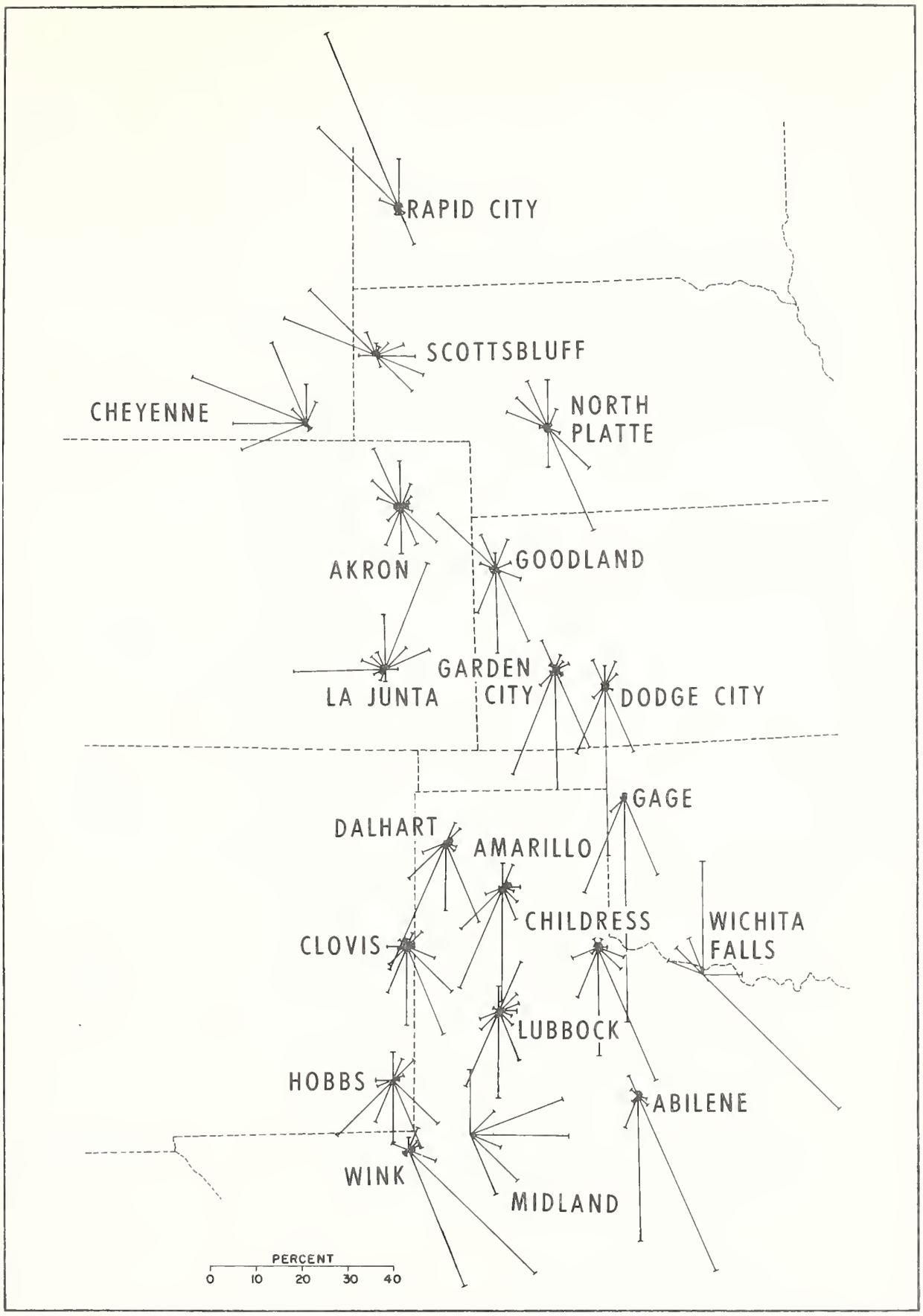


FIGURE 14.—Percentage of hourly observations of winds 25 m.p.h. and stronger from different directions in June. Scale is used to convert length of line to percentage.

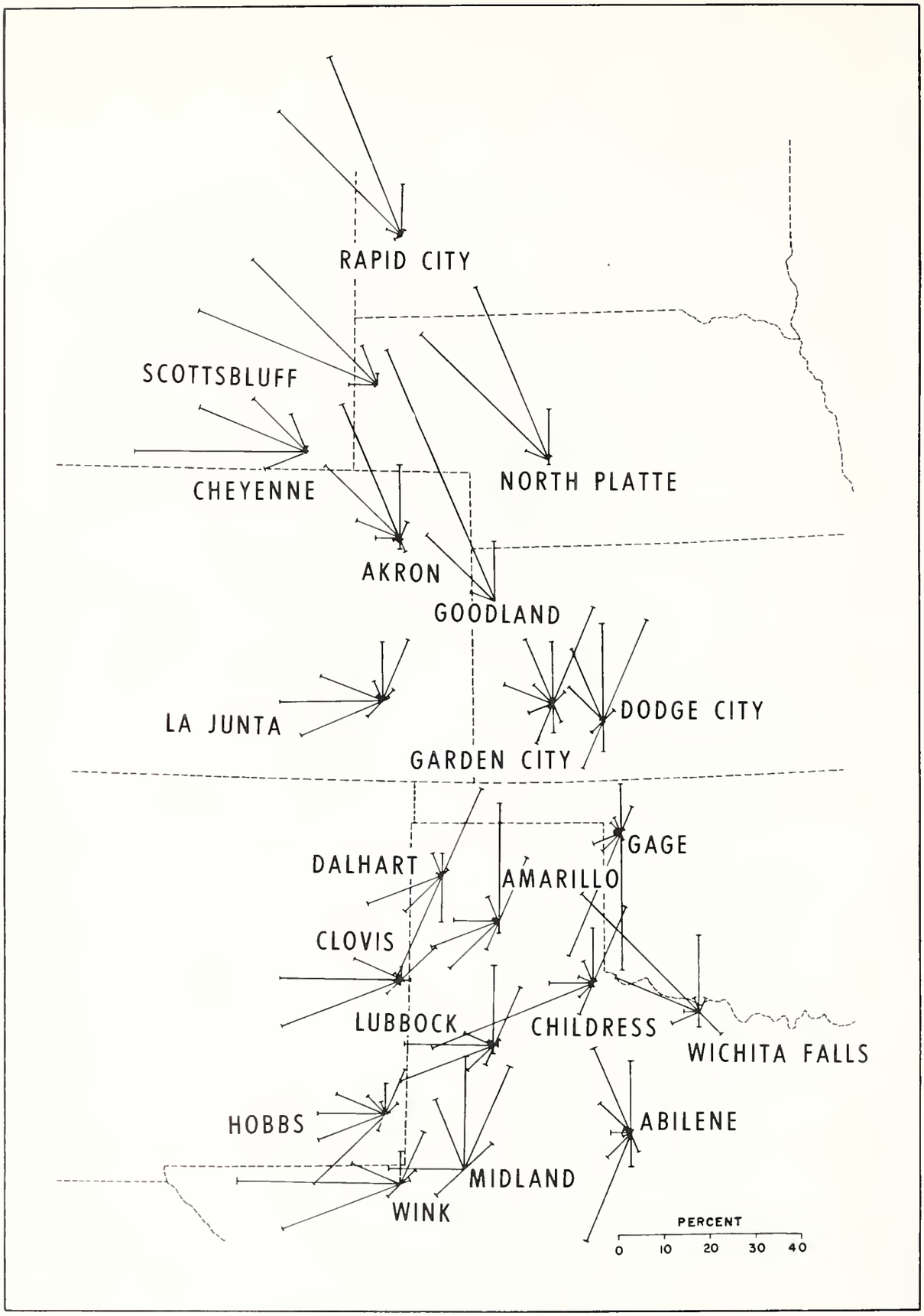


FIGURE 15.—Percentage of hourly observations of winds 25 m.p.h. and stronger from different directions in December. Scale is used to convert length of line to percentage.

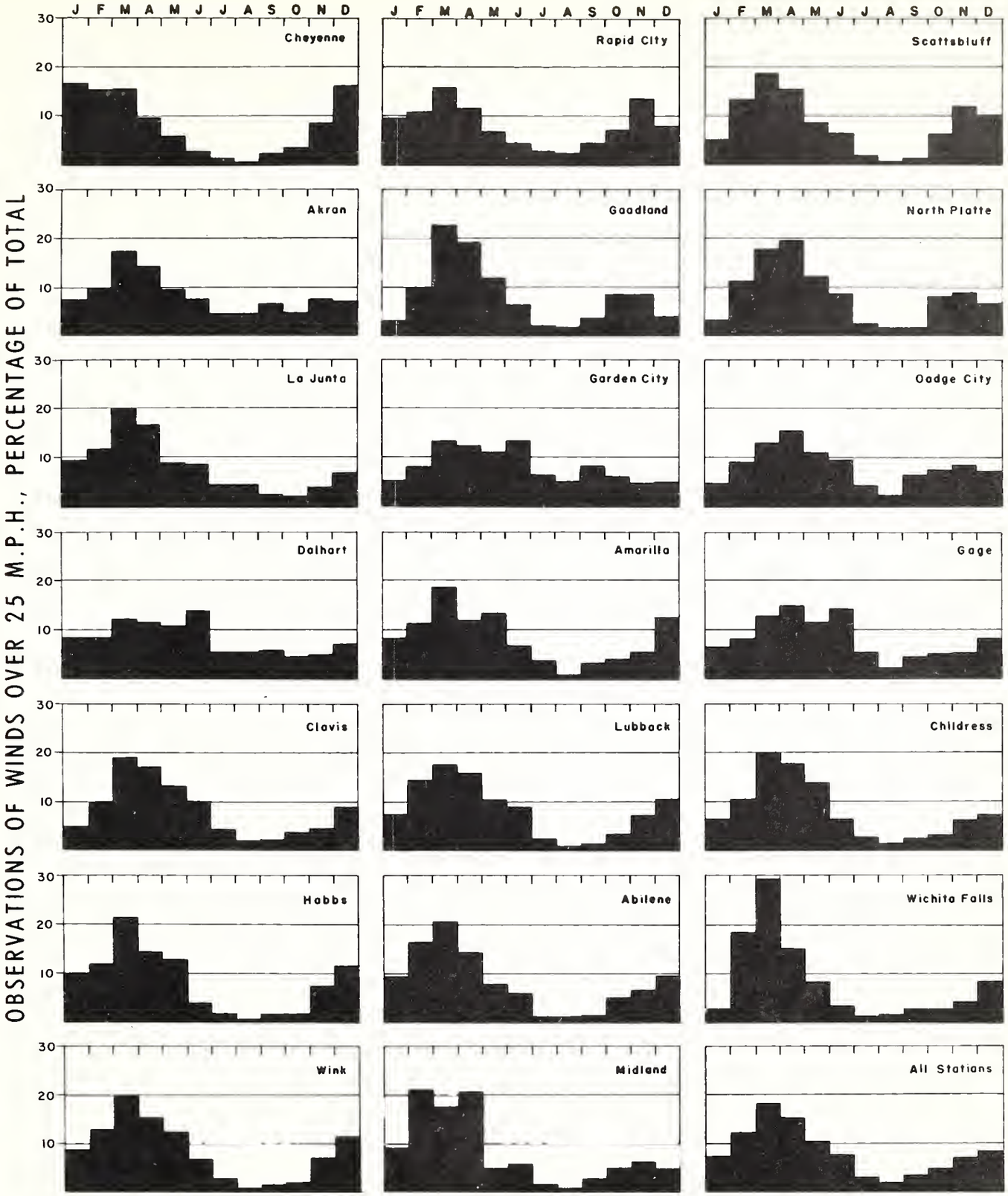


FIGURE 16.—Percentage of hourly wind observations of winds over 25 m.p.h., by month and location.

will be convex upward at night when the air is being cooled from below by contact with the ground. In the afternoon when the air is being warmed from below, the curve will be concave upwards. When air temperature is uniform with height, as when the air is thoroughly mixed, the log height-windspeed curve approaches a straight line. Correcting each observation for anemometer height by the most rigorous methods would therefore be an individual problem and would require information not available in the present investigation.

For the special needs of the present report it was necessary to determine experimentally empirical windspeed-height relations suitable for use with the data available and under Great Plains conditions. Several simplifying assumptions and restrictions were made. First, as previously

stated, consideration was restricted to the higher windspeeds so that thorough mixing of the air and a linear log height-windspeed relation could be assumed. It was assumed also that the higher windspeeds to be corrected occurred mainly in the afternoon, the usual time of peak windspeed.

Information about the change of wind velocity with height during the cool season months was available from measurements made at the Southwestern Great Plains Field Station, Bushland, Tex. (near Amarillo). These observations were made to a height of 32 feet over two kinds of ground surface: from November 1, 1960 to April 1, 1961, over the stalks remaining from a crop of irrigated sorghum; and from February 1 to April 1, 1962, over a sparse sod of buffalograss. The 3- to 4-p.m. wind observations on the windier days were summarized separately for the two surface conditions to provide the windspeed-height relationships shown by solid line curves in figure 17 for the sorghum stalks and in figure 18 for the buffalograss sod.

These curves are composites or averages obtained by grouping the observations according to windspeed and obtaining the average windspeed at each anemometer height for each group of observations. The data obtained over sorghum stalks lends itself to separation into four groups. For this reason there are four solid-line curves in figure 17. In the case of buffalograss sod there were six groups of observations and there are six solid line windspeed-height curves (fig. 18). There were five anemometer heights used over the sorghum field so there are five points on the log height-speed curves for this surface condition (fig. 17). Similarly, there were seven anemometer heights over the buffalograss sod and hence there are seven points on the curves for buffalograss (fig. 18).

To obtain windspeed-height curves for reducing the airway wind observations to a standard anemometer height it was necessary that the windspeed-height relations be extrapolated to a height of 70 feet, the highest anemometer height at any of the observing stations. In order to extrapolate objectively the original windspeed-height curves, which are the solid lines of figures 17 and 18, the curves were linearized, or converted to the straight line form.

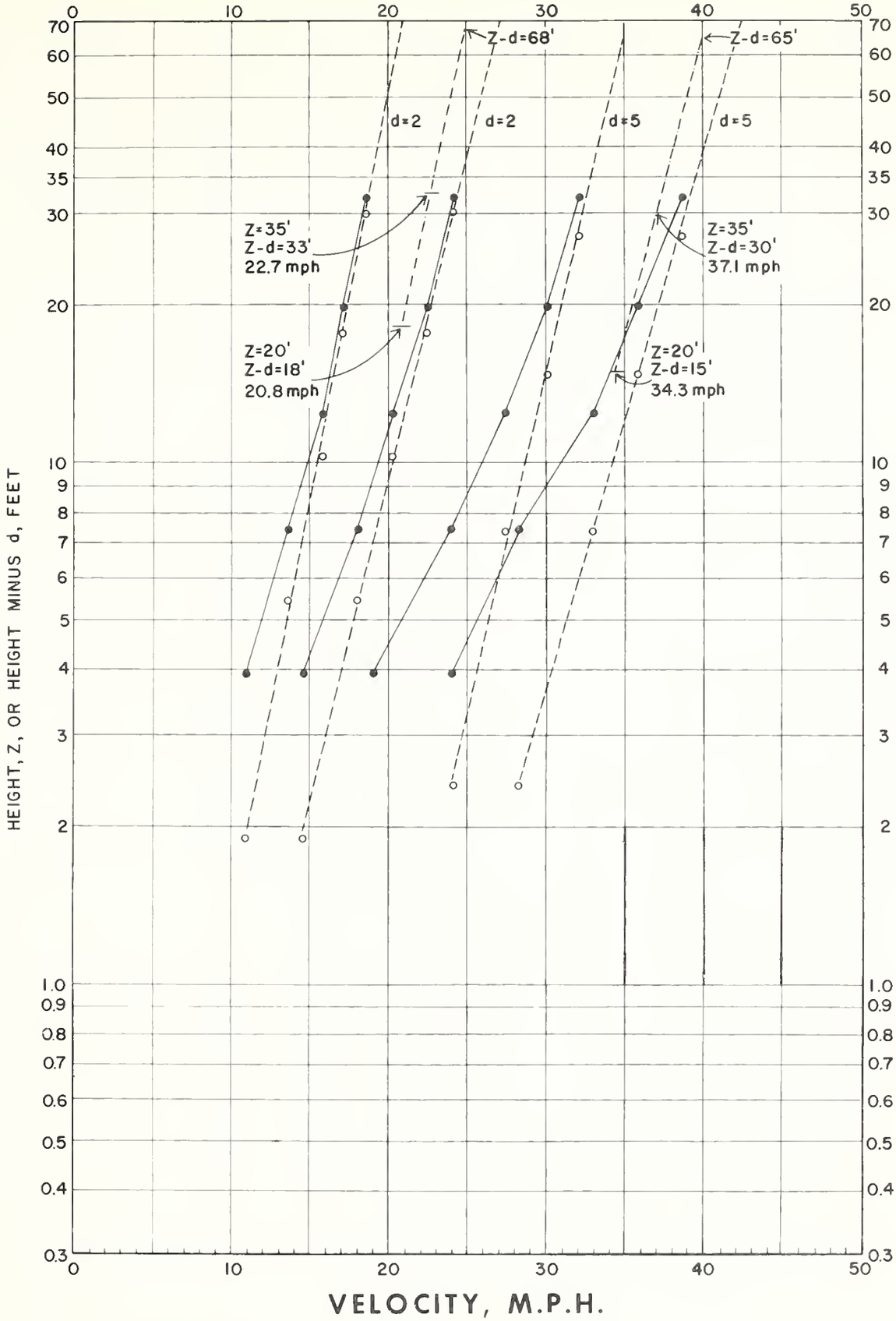
Linearization of a curve was accomplished by displacing each plotted point downward by the constant increment of height (usually referred to in climatological literature as the zero plane displacement (d) which would result in a straight line plot of log height versus velocity. The linear log height-windspeed curves obtained by this procedure are the dashed lines of figures 17 and 18, which have been extrapolated to the 70-foot height. The log height-windspeed curves over the rough sorghum-stalk surface required for linearization a displacement ranging from 5 feet for the windiest conditions to 2 feet for light winds (fig. 17). On the other hand, the log height-windspeed curves for the smooth buffalograss surface required a very small displacement for linearization—0.1 foot or less. In other words, the data indicated that the linear relation between log height and windspeed began quite near the ground above the buffalograss sod, at a height of about an inch or less, but at a height ranging from 2 to 5 feet above the ground, depending on windspeed, over the sorghum stubble surface.

Although, due to the rough surface condition, the windspeed changed much more rapidly near the ground over the sorghum stalks than over the buffalograss, the linearized curves (dashed lines) of figures 17 and 18 indicated that in the range of from 20 to 70 feet above the ground the change in windspeed with height (Z) would be nearly the same over the two surfaces. The similarity is seen when wind velocities of 40 and 25 m.p.h. at 70 feet are corrected to heights of 35 and 20 feet above the ground (dash-dot lines in figures 17 and 18). The uncorrected and corrected values for both cover conditions have been tabulated (table 3) for comparison purposes. It will be noted that to use figures 17 and 18 to reduce a windspeed from one height to another it is necessary to interpolate between adjacent linearized speed-height, or dashed line, curves. To use figure 17 to reduce a 40 m.p.h. wind at 70 feet to heights of 35 and 20 feet, it was necessary to plot the point, $Z-d=70-5=65$, velocity=40 m.p.h., and draw a speed-height curve (dash-dot line) intermediate in slope between the adjacent dashed line curves to $Z-d=30$ and $Z-d=15$. The procedure was much simpler in using figure 18 because of the very small d values.

TABLE 3.—*Correction of windspeeds of 40 and 25 m.p.h. at 70-feet-above-ground height to windspeeds at heights of 35 and 20 feet above ground, using average windspeed-height curves obtained over buffalograss sod (fig. 18) and grain sorghum stubble (fig. 17)*

Windspeed at 70-foot height (m.p.h.)	Surface condition	Windspeed at 70-foot height corrected to a height of—	
		35 feet	20 feet
		M.p.h.	*M.p.h.*
40	Grain sorghum	37.1	34.3
	Buffalograss	36.8	34.1
25	Grain sorghum	22.7	20.8
	Buffalograss	22.9	21.2

The height of the anemometer above the ground at each of the basic group of 20 airway stations is shown on figure 18 to make possible a comparison of windspeed at the different stations. The arrows in this illustration show that a 25-m.p.h. windspeed at Clovis would correspond to

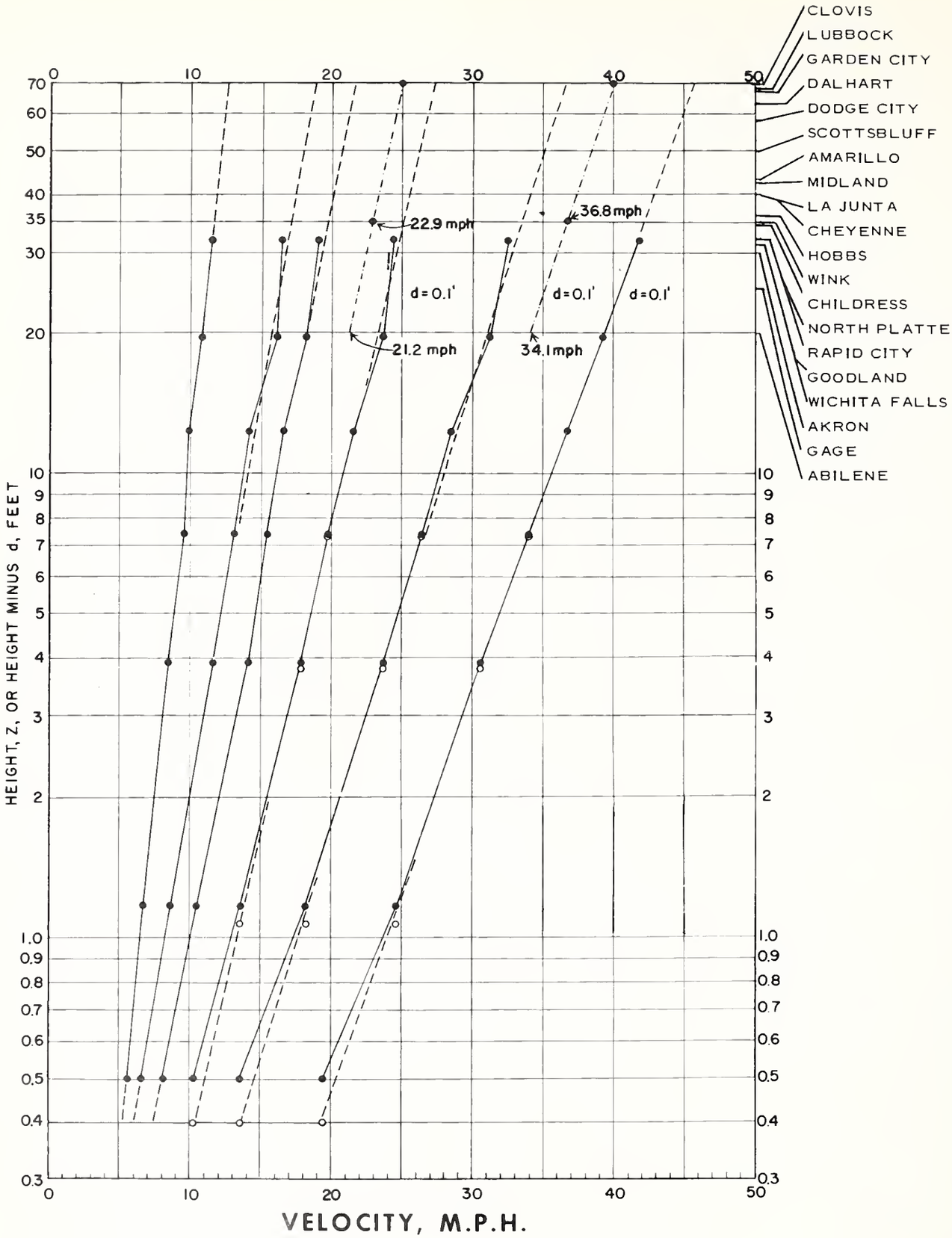


● *Wind Velocity Versus Height (Z)*

○— —○ *Linearized Curve: Velocity Versus Height (Z) Minus Zero Plane Displacement (d)*

Arrows indicate data points for comparisons made in text.

FIGURE 17.—Average curves showing change of wind velocity with height at 3 to 4 p.m. over stalks of an irrigated grain sorghum field, November 1, 1960 to April 1, 1961. Southwestern Great Plains Field Station, Bushland, Tex.



●——● *Wind Velocity Versus Height (Z)*
○— — ○ *Linearized Curve: Velocity Versus Height (Z) Minus Zero Plane Displacement (d)*
Arrows indicate data points for comparisons made in text. Height of station anenometers shown on right-hand axis.

FIGURE 18.—Average curves showing change of wind velocity with height at 3 to 4 p.m. over a buffalograss sod, February 1 to April 1, 1962. Southwestern Great Plains Field Station, Bushland, Tex.

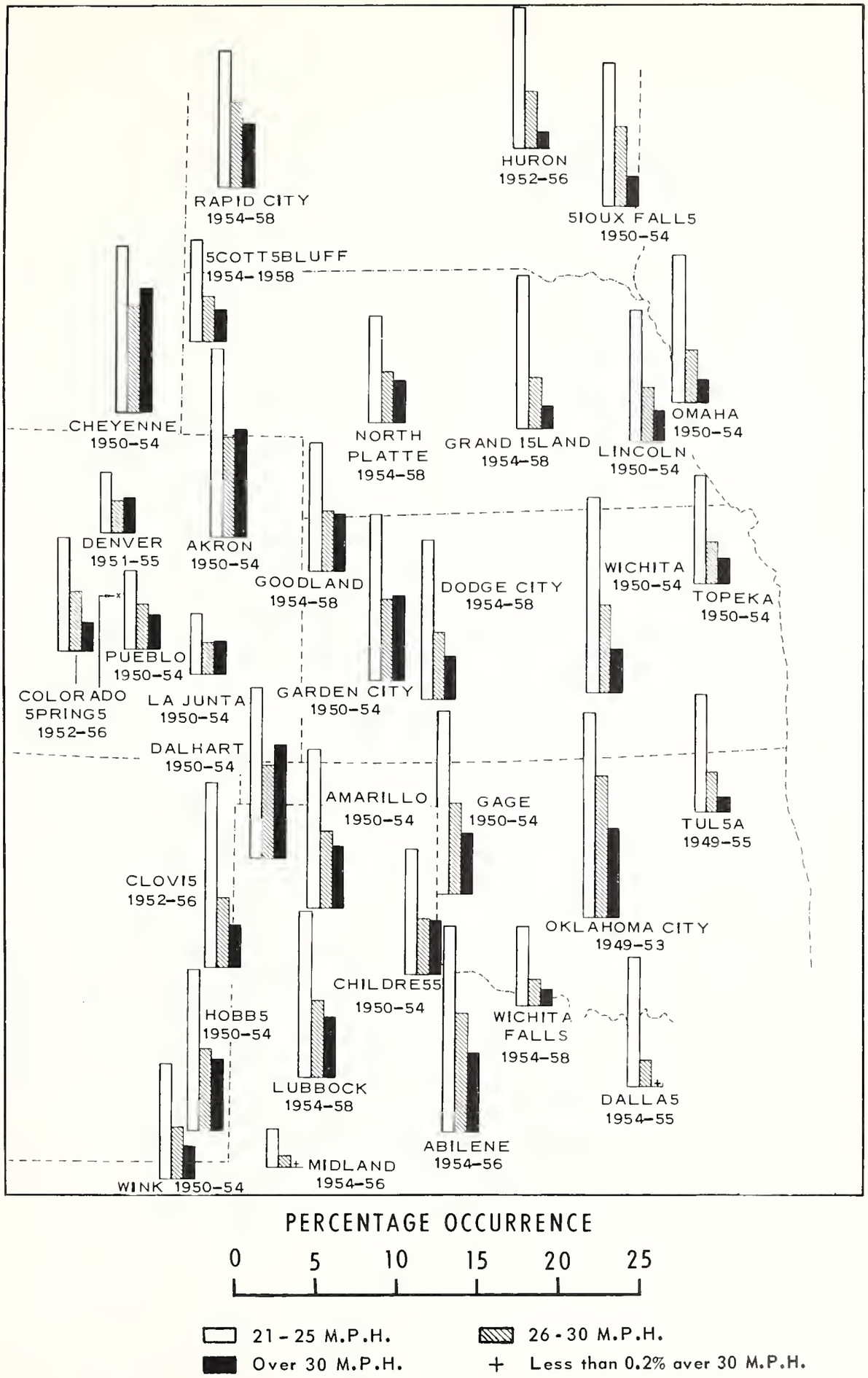


FIGURE 19.—Percentage of March winds 21 to 25, 26 to 30, and over 30 m.p.h., corrected to a 35 feet-above-ground height. Base of center bar shows station location except where arrow shows displacement.

22.9 m.p.h. at Wink and 21.1 m.p.h. at Abilene. Also a 40-m.p.h. windspeed at Clovis would correspond to 36.8 and 34.1 m.p.h. at Wink and Abilene, respectively.

Figures 17 and 18 illustrate the need for controlling the anemometer height and nature of the ground surface closely when comparing wind measurements made near the ground at several locations. The effect of variable surface condition is largely responsible for the lack of agreement frequently seen in wind observations made at evaporation stations where the anemometer height is less than 2 feet above the ground.

Since figures 17 and 18 were in reasonable agreement, the windspeed-height curves of figure 18, being easier to use, were used for reducing the March windspeeds at all stations to a standard height of 35 feet and no further use was made of figure 17. The standard height of 35 feet was chosen because it was approximately the average height of the anemometers at the basic group of 20 stations and would require a minimum amount of adjustment of the data. The corrections involved were not large in the anemometer range of 20 to 70 feet. Since windspeed is proportional to the logarithm of height, the amount of windspeed change in miles per hour between heights of 20 and 70 feet is the same as between 2 and 7 feet (fig. 18). However, due to the nature of the frequency distribution of March windspeed, even such small corrections for height can make important changes in the estimated frequency of occurrence of the extreme velocities. For example, an observed windspeed of 25 m.p.h. at Clovis, N. Mex. is reduced to 22.9 m.p.h. after correction for anemometer height. Although this amount of correction does not seem great, it reduces the estimated percent frequency of occurrence of winds over 25 m.p.h. at Clovis from 12 percent to 7.4 percent of the observations, proportionately a much greater change.

The percentage of time the corrected windspeeds fall into three velocity ranges over 20 m.p.h. at the various locations is shown in figure 19. The National Weather Records Center furnished 5-year summaries of the frequency of occurrence in March of wind by velocity range at a number of locations in the Great Plains besides the 20 stations originally chosen for this report. Windspeeds for these locations were also reduced to a standard 35-foot anemometer height and have been included for comparison purposes. If figure 19 is examined in its grosser aspects and the frequency of occurrence of wind in the 26- to 30- and over 30-m.p.h. velocity ranges is used as a windiness criterion, the generalization can be made that the western halves of Kansas and Oklahoma, the Texas Panhandle, eastern New Mexico, northeastern Colorado, and southeastern Wyoming comprise the windiest portion of the geographic region considered in this report.

As previously stated, the validity of these comparisons is weakened by the shortness of the record

TABLE 4.—*Percentage frequency of occurrence of March winds of 21 to 25, 26 to 30, and over 30 m.p.h., and average windspeed for March, at Amarillo, Tex., in two 5-year periods, 1950–54 and 1954–58*

Years	Frequency of occurrence of winds [1] of—			Average windspeed
	21–25 m.p.h.	26–30 m.p.h.	Over 30 m.p.h.	
	Percent	*Percent*	*Percent*	*M.p.h.*
1950–54	10.0	4.8	3.9	15.1
1954–58	9.7	4.3	3.6	15.1

[1] Corrected to 35-foot height.

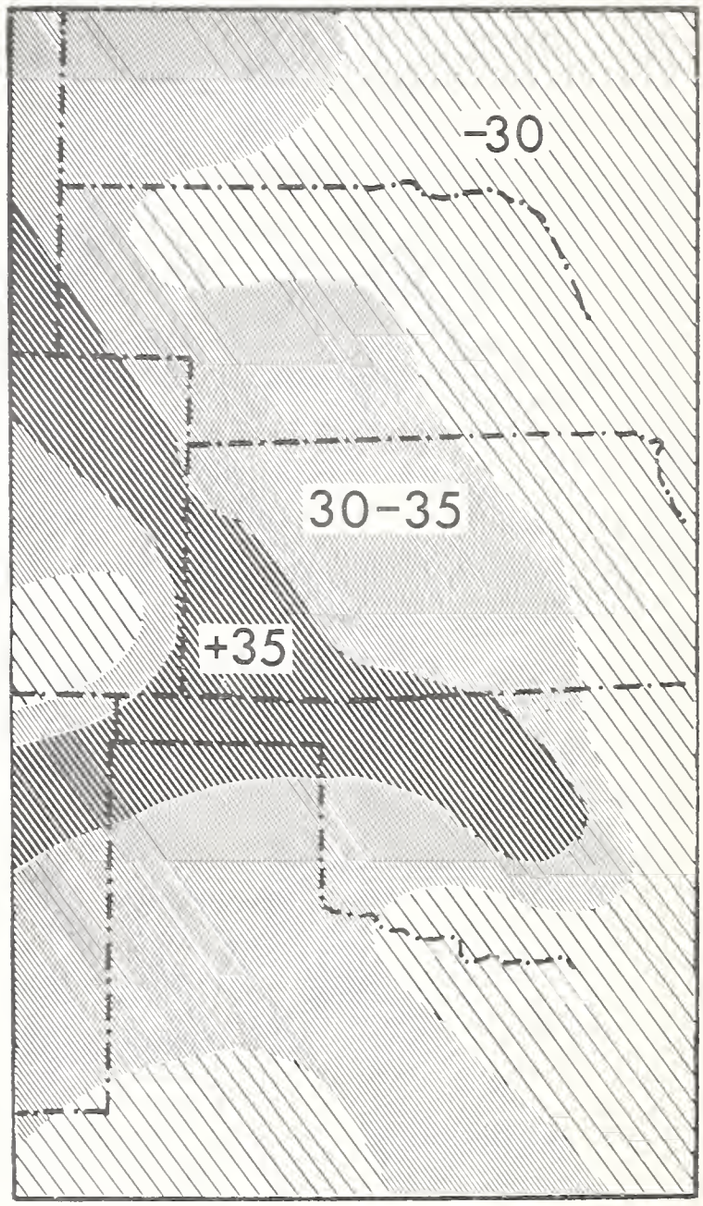


FIGURE 20.—Relative windiness in the Great Plains, as shown by areas in which March windspeeds less than 30, 30 to 35, and over 35 m.p.h. (corrected to 35 feet above ground) are exceeded 2 percent of the time.

(5 years) and by the fact that two different time periods are involved. However, some confidence in the validity of the above-listed conclusions is derived from the comparison made in table 4 of wind conditions at Amarillo in March during 1950–54 and 1954–58, which shows quite comparable conditions for the two 5-year periods.

A second way of indicating windiness is by stating the windspeed that is exceeded a small fraction of the time. Figure 20 shows general areas where the data of this study indicate that the March wind velocity exceeded 2 percent of the time is in the range of less than 30, 30 to 35, and over 35 m.p.h. Judged by this criterion, the windiest part of the southwestern Great Plains, where the March windspeed is more than 35 m.p.h. 2 percent of the time, is in northwestern Oklahoma, the northern Texas Panhandle, southwestern Kansas, northeastern Colorado, and southeastern Wyoming.

Previously, most estimates of comparative windiness have been based on average windspeeds (*14*). With the same average windspeed the frequency distribution of windspeed can vary, however, leading to differing estimates of the probable frequency of occurrence of the higher speeds. For example, after the correction for anemometer height was made, Garden City, Dodge City, and Wichita had nearly the same average March windspeed; however, the ratio of the number of winds over 30 m.p.h. to those in the 25- to 30-m.p.h. range increased in going from east to west in Kansas, and of the three locations, Garden City had the greatest number of winds over 30 m.p.h. The high ratio of the number of winds over 30 m.p.h. to those in the 26- to 30-m.p.h. range was noteworthy in the Texas Panhandle, extreme western Kansas, southeastern Wyoming, and northeastern Colorado.

Maps of average windspeed shown by Visher (*14*) lend credence to the light winds shown in figure 19 for Wink and Midland and to the strong winds indicated for the northwestern Texas Panhandle, northeastern Colorado, and southeastern Wyoming. However, the windiness at Wichita, Oklahoma City, and Abilene found in the present study would not have been predicted from Visher's maps.

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APPENDIX

The basic data for this report are summarized in appendix tables 5 to 24. Table 2 (p. 7) and the associated text illustrate the use of these tables. Figure 4 (p. 6) shows the method used to reduce the original wind-direction observations, made to 16 points of the compass, to the 8 overlapping direction groupings.

The data of tables 5 to 24 are presented graphically as wind polygons in appendix figures 21 to 40. The percentage occurrence of winds in the 0- to 3-m.p.h. range is indicated by the number in the center of the polygon; the percentage occurrence of winds in other speed ranges is indicated by the lengths of the segments of the radial lines corresponding to the 16 points of the compass. The four wind polygons for each station immediately precede the tabular data for that station. Figure 5 (p. 8) and the associated text explain in detail the wind-polygon method of data presentation.

The wind polygons of figures 21 to 40 are intended to present the complex statistics relating to the wind in a form permitting the reader to visualize the seasonal and geographic variations that occur. For example, the great constancy of the wind direction from a southerly quadrant at the southern locations in June and September is readily seen, as is the pronounced tendency for the occurence of wind from a westerly quadrant in the western Texas Panhandle and eastern New Mexico in December. The increasing tendency for winds to occur from the northwesterly quadrant in going from southern to northern states in all seasons is also readily apparent.

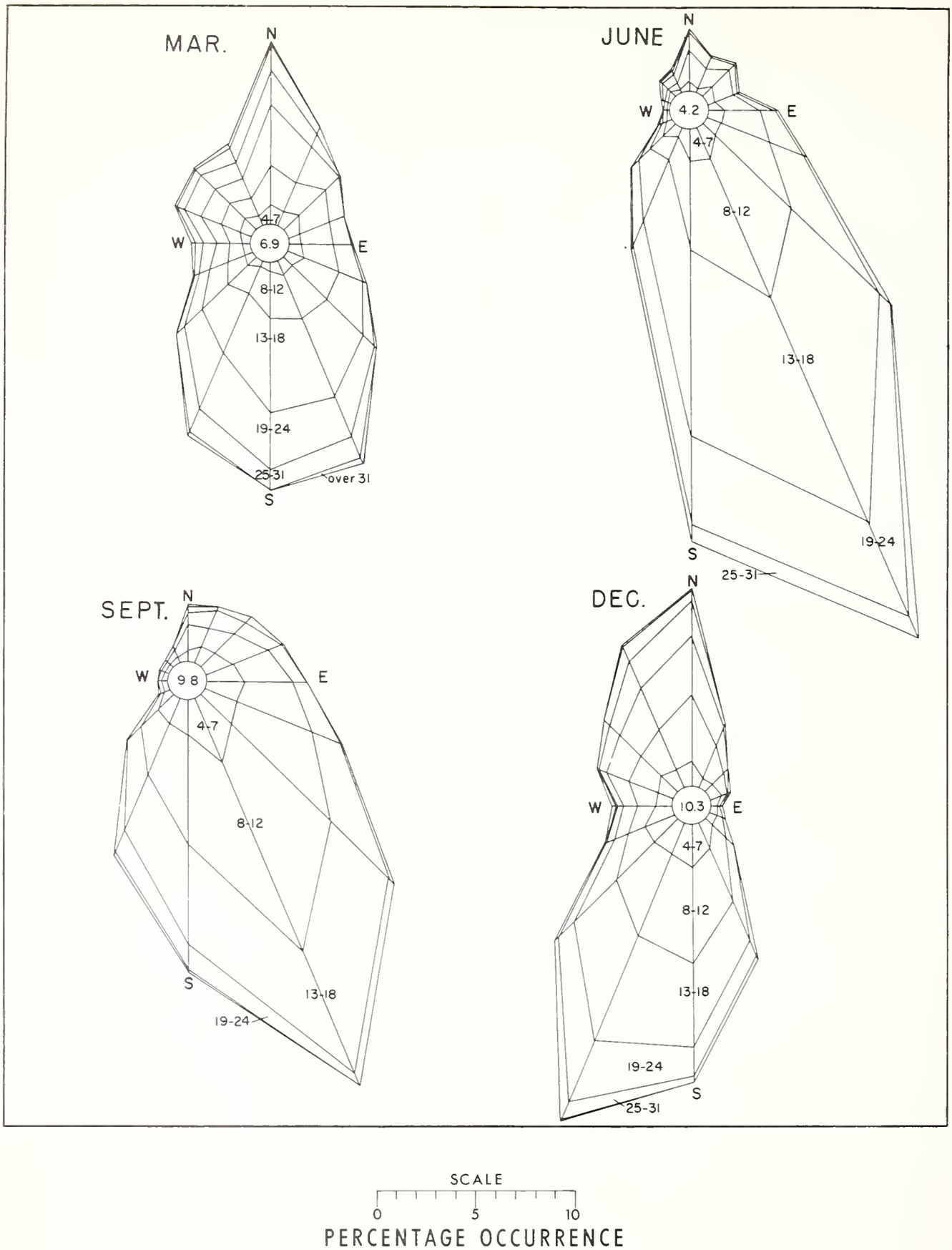


FIGURE 21.—Wind direction-speed polygons for Abilene, Tex.

TABLE 5.—*Percentage frequency of occurrence of wind classified according to direction and speed, Abilene, Tex., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	1.0	4.4	7.6	7.2	1.8	0.8	0.1	-----	22.8	11.9
NE	.9	3.4	4.4	2.2	.3	-----	-----	-----	11.2	9.2
E	.5	2.2	2.8	1.4	.1	-----	-----	-----	7.0	8.9
SE	.5	3.1	6.9	5.6	1.6	.2	+	-----	17.9	11.7
S	.5	3.8	10.2	12.0	5.5	2.0	.1	-----	34.2	14.0
SW	1.0	2.6	5.0	7.2	3.5	1.4	.1	-----	20.7	14.1
W	1.1	2.5	2.1	1.8	.9	.5	+	-----	8.8	10.9
NW	.9	3.0	4.3	3.3	1.5	.9	.1	+	13.9	12.1
Calm	6.5	-----	-----	-----	-----	-----	-----	-----	6.5	-------
Total	10.7	17.3	29.6	28.1	10.1	4.0	.3	+	143.0	11.7

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.8	3.6	6.1	6.3	3.0	1.5	0.3	-----	21.7	13.3
NE	.8	3.5	4.6	2.1	.3	+	-----	-----	11.3	9.2
E	.4	2.5	3.5	1.5	.2	+	-----	-----	8.2	9.4
SE	.8	2.9	7.3	6.4	2.0	1.1	-----	-----	20.6	12.6
S	1.0	3.1	8.2	10.3	6.7	3.1	.4	+	32.8	15.2
SW	.7	2.4	4.2	5.2	4.9	2.4	.5	0.1	20.5	15.8
W	.7	2.3	3.0	2.3	1.4	.8	.3	.3	11.0	13.0
NW	.3	2.7	3.8	3.2	1.9	1.1	.3	+	13.4	13.5
Calm	4.0	-----	-----	-----	-----	-----	-----	-----	4.0	-------
Total	8.1	16.1	28.7	25.5	13.6	6.8	1.2	.3	143.5	13.0

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.6	2.3	4.6	6.1	3.4	2.4	0.2	0.1	19.8	15.6
NE	.9	2.6	5.2	3.7	.8	.4	+	-----	13.5	11.3
E	.6	2.1	5.1	3.0	.3	-----	-----	-----	11.0	10.3
SE	.5	2.3	6.7	8.2	3.2	1.3	.3	-----	22.6	14.2
S	.4	1.6	6.3	12.4	8.2	3.5	.5	-----	33.0	16.7
SW	.4	1.3	3.8	6.2	4.8	2.2	.3	-----	19.0	16.4
W	.4	1.4	2.5	2.8	2.2	1.1	.3	-----	10.6	14.6
NW	.6	1.9	3.2	3.2	2.8	1.6	.3	.1	13.7	15.0
Calm	3.7	-----	-----	-----	-----	-----	-----	-----	3.7	-------
Total	6.9	10.5	25.4	30.6	17.2	8.2	1.2	.1	146.9	14.3

Direction	April									
N	0.7	2.0	3.5	4.1	2.6	1.1	+	-----	13.9	14.0
NE	.7	2.5	4.7	4.0	1.0	.3	-----	-----	13.2	11.8
E	.5	2.2	4.7	3.6	.7	+	-----	-----	11.7	11.2
SE	.3	2.1	7.2	12.7	6.1	1.3	0.1	-----	29.9	14.8
S	.3	1.9	8.2	16.9	10.5	3.1	.2	+	41.1	16.0
SW	.4	1.2	4.5	5.6	3.3	1.4	.1	+	16.5	15.2
W	.4	1.2	2.3	2.7	2.0	1.1	.2	-----	10.0	14.4
NW	.5	1.6	2.8	2.3	2.0	1.0	.1	-----	10.2	13.7
Calm	2.2	-----	-----	-----	-----	-----	-----	-----	2.2	-------
Total	4.7	10.0	25.4	34.8	18.5	6.2	.3	+	148.7	14.4

Direction	May									
N	0.4	1.8	3.9	3.6	1.1	0.4	0.1	-----	11.3	12.7
NE	.6	2.1	3.6	2.6	.6	.1	.1	-----	9.6	10.9
E	.5	2.8	6.1	3.4	.6	.2	-----	-----	13.6	10.9
SE	.8	4.7	13.8	16.6	6.5	1.5	.1	-----	44.0	13.4
S	1.0	4.0	11.5	16.8	8.4	2.5	.1	-----	44.4	14.4
SW	.7	1.8	3.0	4.5	1.3	.3	-----	-----	11.5	13.1
W	.3	1.5	2.3	.9	.2	+	-----	-----	5.3	9.6
NW	.3	1.6	2.8	1.7	.7	.2	-----	-----	7.4	11.5
Calm	3.4	-----	-----	-----	-----	-----	-----	-----	3.4	-------
Total	6.5	13.7	31.3	32.4	12.5	3.4	0.2	-----	150.5	12.6

Direction	June									
N	0.3	0.9	3.1	2.1	0.5	0.1	0.1	-----	7.0	12.5
NE	.4	1.3	3.4	1.3	.3	.1	+	-----	6.7	10.0
E	.5	2.1	5.5	3.0	.4	.1	+	-----	11.6	10.5
SE	.5	3.4	15.7	20.6	6.2	1.3	+	-----	47.8	13.8
S	.6	3.9	13.4	25.3	11.3	2.2	.1	+	56.9	15.0
SW	.3	1.7	2.4	4.4	2.0	.2	+	+	11.0	14.2
W	.3	.5	.7	.3	.1	-----	-----	-----	1.9	9.2
NW	.3	.7	.8	1.0	.4	.2	-----	-----	3.4	12.2
Calm	1.9	-----	-----	-----	-----	-----	-----	-----	1.9	-------
Total	4.2	10.3	30.3	38.6	13.8	2.7	.1	+	148.2	13.3

Direction	July									
N	0.2	0.9	1.3	0.6	0.2	+	-----	-----	3.2	10.0
NE	.3	.9	1.7	1.0	.2	+	-----	-----	4.1	10.2
E	.6	1.8	4.4	2.7	.2	-----	-----	-----	9.6	10.1
SE	.8	4.6	22.1	14.1	2.3	-----	-----	-----	43.9	11.7
S	.7	6.2	25.4	24.0	5.2	0.5	-----	-----	62.0	12.5
SW	.7	2.8	7.0	6.9	1.3	.2	-----	-----	18.9	11.7
W	.4	1.0	1.0	.3	.1	-----	-----	-----	2.7	8.2
NW	.2	.8	.7	.3	1	-----	-----	-----	2.1	9.0
Calm	2.2	-----	-----	-----	-----	-----	-----	-----	2.2	-------
Total	4.8	12.9	42.0	33.2	6.5	.6	-----	-----	148.7	11.6

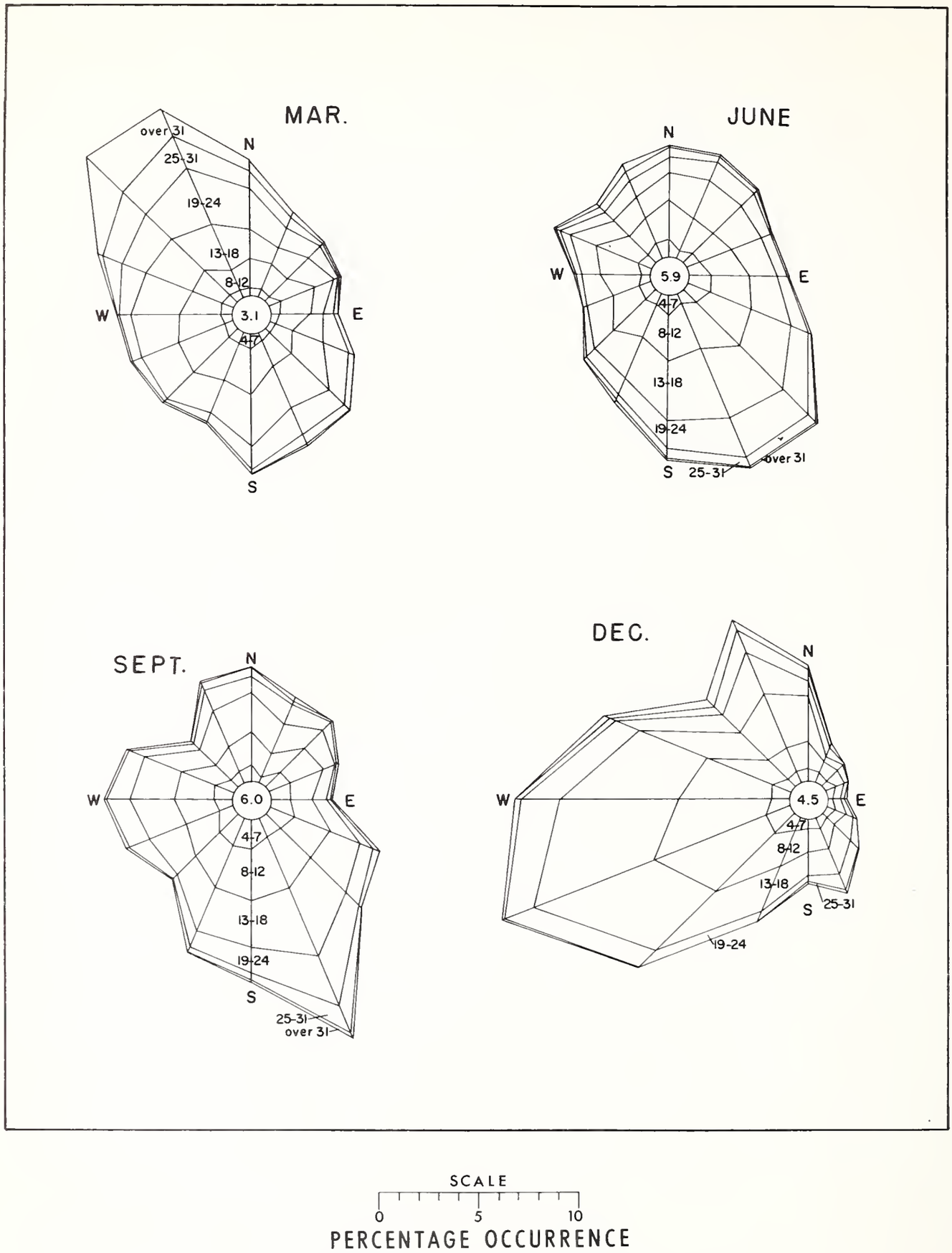
Direction	August									
N	0.4	1.6	2.3	2.1	0.1	+	-----	-----	6.5	10.2
NE	.5	2.1	3.5	2.5	.2	-----	-----	-----	8.7	9.6
E	.7	2.9	8.0	2.7	.1	+	-----	-----	14.4	9.7
SE	.9	6.1	22.6	12.4	1.2	0.3	-----	-----	43.5	10.9
S	1.0	6.6	20.7	16.9	3.2	.4	-----	-----	48.8	11.6
SW	.6	3.2	5.9	5.6	1.4	.1	-----	+	16.9	11.8
W	.5	1.2	1.3	.4	.1	-----	-----	-----	3.5	8.0
NW	.3	1.0	1.3	.7	.1	-----	-----	-----	3.3	8.9
Calm	2.6	-----	-----	-----	-----	-----	-----	-----	2.6	-------
Total	6.0	16.6	44.0	28.6	4.2	0.5	-----	+	148.2	10.8

Direction	September									
N	0.7	1.8	2.7	1.9	0.5	0.1	-----	-----	7.6	9.9
NE	1.1	3.3	4.4	2.5	.7	.1	-----	-----	12.1	9.6
E	.9	5.1	8.4	2.9	.2	.1	+	-----	17.6	9.2
SE	1.1	7.5	21.5	12.3	1.2	.1	+	-----	43.7	10.6
S	1.4	6.8	18.8	14.9	3.2	.4	-----	-----	45.5	11.7
SW	.9	2.8	4.1	4.1	1.3	.3	-----	-----	13.3	11.6
W	.6	.9	.6	.2	-----	+	-----	-----	2.2	6.4
NW	.5	.7	.8	.4	-----	-----	-----	-----	2.5	7.4
Calm	4.7	-----	-----	-----	-----	-----	-----	-----	4.7	-------
Total	9.8	18.9	40.2	25.7	4.9	0.6	+	-----	149.2	10.2

Direction	October									
N	0.8	3.0	5.3	4.1	1.5	0.3	0.1	-----	15.1	11.2
NE	.7	3.5	4.5	2.1	.3	.1	-----	-----	11.2	8.7
E	1.0	3.5	4.0	1.1	.1	-----	-----	-----	9.7	8.0
SE	1.0	5.0	12.9	9.8	2.1	.6	.1	-----	31.5	11.2
S	1.0	6.2	13.4	15.4	4.9	1.3	.2	-----	42.5	12.4
SW	1.0	3.1	3.8	6.4	2.1	.4	+	-----	16.8	12.2
W	.8	1.7	1.5	.6	.5	.1	-----	-----	5.3	9.2
NW	.7	1.7	2.4	1.4	.5	.3	-----	-----	7.1	10.6
Calm	6.1	-----	-----	-----	-----	-----	-----	-----	6.1	-------
Total	10.8	19.1	32.3	27.3	8.2	2.1	.3	-----	145.3	11.0

Direction	November									
N	0.6	2.9	5.7	6.2	3.3	1.1	0.1	-----	19.8	13.6
NE	.4	2.2	3.6	2.7	1.1	.3	-----	-----	10.3	11.3
E	.4	1.5	2.4	1.1	.1	+	-----	-----	5.6	8.5
SE	.7	4.1	7.2	4.2	.7	.2	.1	-----	17.2	10.2
S	1.1	6.2	14.6	10.6	4.1	1.1	.3	-----	37.8	12.2
SW	1.1	4.4	8.0	8.1	3.5	.8	.1	-----	26.0	12.6
W	1.1	2.8	2.4	2.7	.5	.3	.1	-----	9.9	10.8
NW	.9	2.6	3.8	3.6	1.5	.5	+	-----	12.9	11.6
Calm	5.6	-----	-----	-----	-----	-----	-----	-----	5.6	-------
Total	9.9	18.4	32.4	26.3	10.0	2.9	.3	-----	145.1	11.4

Direction	December									
N	0.6	2.8	7.4	6.4	3.5	1.3	0.2	+	22.2	14.0
NE	.3	1.6	2.8	1.5	.3	-----	+	-----	6.6	9.8
E	.4	1.3	.7	.2	.1	-----	-----	-----	2.7	6.8
SE	.7	2.4	4.2	2.8	.8	.2	-----	-----	11.1	10.7
S	1.3	5.3	12.4	12.3	5.7	1.5	.1	-----	38.6	13.2
SW	1.3	5.0	8.1	10.0	5.0	1.4	.1	-----	30.4	13.6
W	1.0	3.2	3.4	2.6	1.2	.2	.1	0.1	11.7	11.3
NW	.7	3.0	5.2	5.0	2.6	1.2	.1	+	17.8	13.2
Calm	6.1	-----	-----	-----	-----	-----	-----	-----	6.1	-------
Total	10.3	16.5	29.7	27.0	12.2	3.7	.5	.1	147.2	12.0



SCALE

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PERCENTAGE OCCURRENCE

FIGURE 22.—Wind direction-speed polygons for Akron, Colo.

TABLE 6.—*Percentage frequency of occurrence of wind classified according to direction and speed, Akron, Colo., November 1949 to October 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.2	1.0	3.5	4.6	3.1	1.7	0.2	-----	14.3	16.4
NE	.1	1.1	3.1	2.2	.6	.1	-----	-----	7.1	12.2
E	.1	1.8	3.5	1.8	.3	-----	-----	-----	7.6	10.6
SE	.2	2.2	3.4	4.1	.8	.4	+	-----	11.2	12.4
S	.3	2.0	7.1	5.9	1.4	.9	.1	-----	17.7	13.0
SW	.2	2.6	14.6	12.2	2.2	.6	.2	-----	32.5	12.9
W	.4	2.0	14.1	13.6	3.1	1.0	.2	.3	34.8	13.9
NW	.2	1.4	6.3	6.7	4.5	2.5	.5	.5	22.7	16.9
Calm	2.7	-----	-----	-----	-----	-----	-----	-----	2.7	-----
Total	4.0	9.5	36.8	33.6	10.4	4.5	.8	.5	150.6	13.4

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.1	1.5	4.0	5.7	4.7	3.6	1.3	0.4	21.2	18.8
NE	+	1.2	2.5	2.1	1.2	.4	.1	-----	7.5	13.5
E	-----	.9	2.3	1.3	.2	.1	-----	-----	4.8	11.3
SE	.1	1.8	2.7	2.8	.8	.4	-----	-----	8.5	12.5
S	.3	2.8	4.6	4.6	1.9	.7	.1	.1	15.1	13.1
SW	.3	3.9	11.1	9.7	1.9	.2	-----	+	27.0	12.2
W	.4	3.7	13.2	12.5	3.5	.6	+	.1	33.8	13.0
NW	.2	2.4	7.4	7.8	5.4	3.9	1.1	.3	28.5	16.9
Calm	2.5	-----	-----	-----	-----	-----	-----	-----	2.5	-----
Total	3.6	12.0	32.2	31.1	12.8	6.1	1.7	.7	148.9	14.0

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.2	1.2	4.1	5.0	6.3	3.3	1.7	0.7	22.4	19.9
NE	.1	1.3	4.7	3.4	2.1	.8	.3	.1	12.8	14.7
E	.2	1.3	4.4	3.3	2.0	.5	.1	-----	12.0	13.7
SE	.3	1.0	3.8	6.6	4.0	1.2	.1	-----	17.1	15.8
S	.3	1.7	5.8	6.7	3.2	.7	.1	-----	18.6	14.4
SW	.2	1.6	7.0	5.8	1.2	.3	+	-----	16.2	12.8
W	.3	1.4	6.1	6.9	2.4	1.2	.2	.1	18.7	14.5
NW	.2	1.5	4.6	7.4	6.2	4.4	2.5	1.9	28.7	21.1
Calm	1.9	-----	-----	-----	-----	-----	-----	-----	1.9	-----
Total	3.1	7.3	27.5	30.2	17.9	8.1	3.5	2.1	148.4	16.2

Direction	April									
N	0.3	1.6	4.8	8.2	5.4	3.6	1.8	.5	26.0	18.6
NE	.3	2.1	4.7	5.1	2.1	.9	.2	.1	15.6	14.2
E	.4	1.4	5.5	3.6	1.5	.3	.1	-----	12.8	12.7
SE	.5	1.5	5.8	5.5	3.7	1.7	.6	.3	19.6	15.8
S	.4	1.7	5.0	6.9	3.6	2.1	.8	.5	21.0	16.7
SW	.4	2.2	5.5	5.2	1.2	.2	+	.1	14.8	12.5
W	.3	1.6	6.5	6.9	1.5	.2	-----	-----	17.0	13.0
NW	.2	1.1	4.6	6.6	3.8	2.2	1.4	.5	20.3	18.1
Calm	2.5	-----	-----	-----	-----	-----	-----	-----	2.5	-----
Total	4.4	9.0	28.1	31.7	15.3	7.4	2.9	1.1	149.6	15.2

Direction	May									
N	0.2	1.5	5.2	7.2	4.2	1.6	0.6	0.2	20.7	16.4
NE	.3	2.4	5.6	6.1	2.9	.8	.2	-----	18.2	14.0
E	.3	2.5	5.8	5.3	1.9	.3	.1	-----	16.2	12.8
SE	.4	2.1	6.4	9.7	5.2	1.6	.6	+	26.0	15.7
S	.6	2.2	5.4	8.2	5.2	1.7	.7	.1	24.1	15.9
SW	.2	2.4	5.4	3.9	1.0	.4	+	-----	13.4	12.0
W	.2	1.9	4.6	3.9	1.1	.3	.1	.1	12.1	12.8
NW	.2	1.5	4.8	5.9	3.3	1.1	.8	.3	17.8	16.4
Calm	3.2	-----	-----	-----	-----	-----	-----	-----	3.2	-----
Total	5.0	10.9	28.9	32.0	15.8	4.9	2.1	.5	151.7	14.2

Direction	June									
N	0.4	2.2	5.1	4.7	2.7	1.2	0.4	0.2	16.9	14.8
NE	.6	1.7	5.1	5.6	2.4	.6	.1	-----	16.0	13.8
E	.6	3.0	5.8	5.1	1.9	.4	-----	+	16.8	12.2
SE	.6	2.6	7.8	9.0	4.9	1.2	.1	.1	26.4	14.4
S	.7	2.1	6.6	9.1	4.5	1.3	.3	.1	24.8	14.9
SW	.4	1.9	5.6	5.0	1.8	.6	.1	.1	15.5	13.6
W	.3	1.8	5.8	3.8	1.2	.3	.1	.1	13.4	12.7
NW	.2	2.1	5.1	3.8	2.1	1.1	.4	.3	14.9	14.7
Calm	3.1	-----	-----	-----	-----	-----	-----	-----	3.1	-----
Total	5.9	11.8	31.8	30.4	14.1	4.6	1.0	.4	147.8	13.5

Direction	July									
N	0.3	1.5	3.6	4.3	2.6	0.5	0.2	-----	13.0	14.8
NE	.5	2.4	4.9	4.3	1.6	.3	.2	-----	14.2	12.9
E	.4	2.8	5.7	4.9	1.7	.3	.1	-----	15.8	12.3
SE	.8	4.0	8.4	10.7	5.4	1.0	.4	-----	30.7	14.1
S	.8	3.1	9.0	12.7	5.7	1.2	.2	-----	32.7	14.3
SW	.5	3.0	5.1	5.1	1.8	.2	.1	+	15.8	12.4
W	.2	2.1	4.5	3.9	1.2	+	-----	+	12.0	12.1
NW	.1	1.5	3.8	3.2	1.7	.2	.1	+	10.6	13.4
Calm	3.5	-----	-----	-----	-----	-----	-----	-----	3.5	-----
Total	6.2	13.6	29.6	32.6	14.6	2.6	.8	.1	148.3	13.0

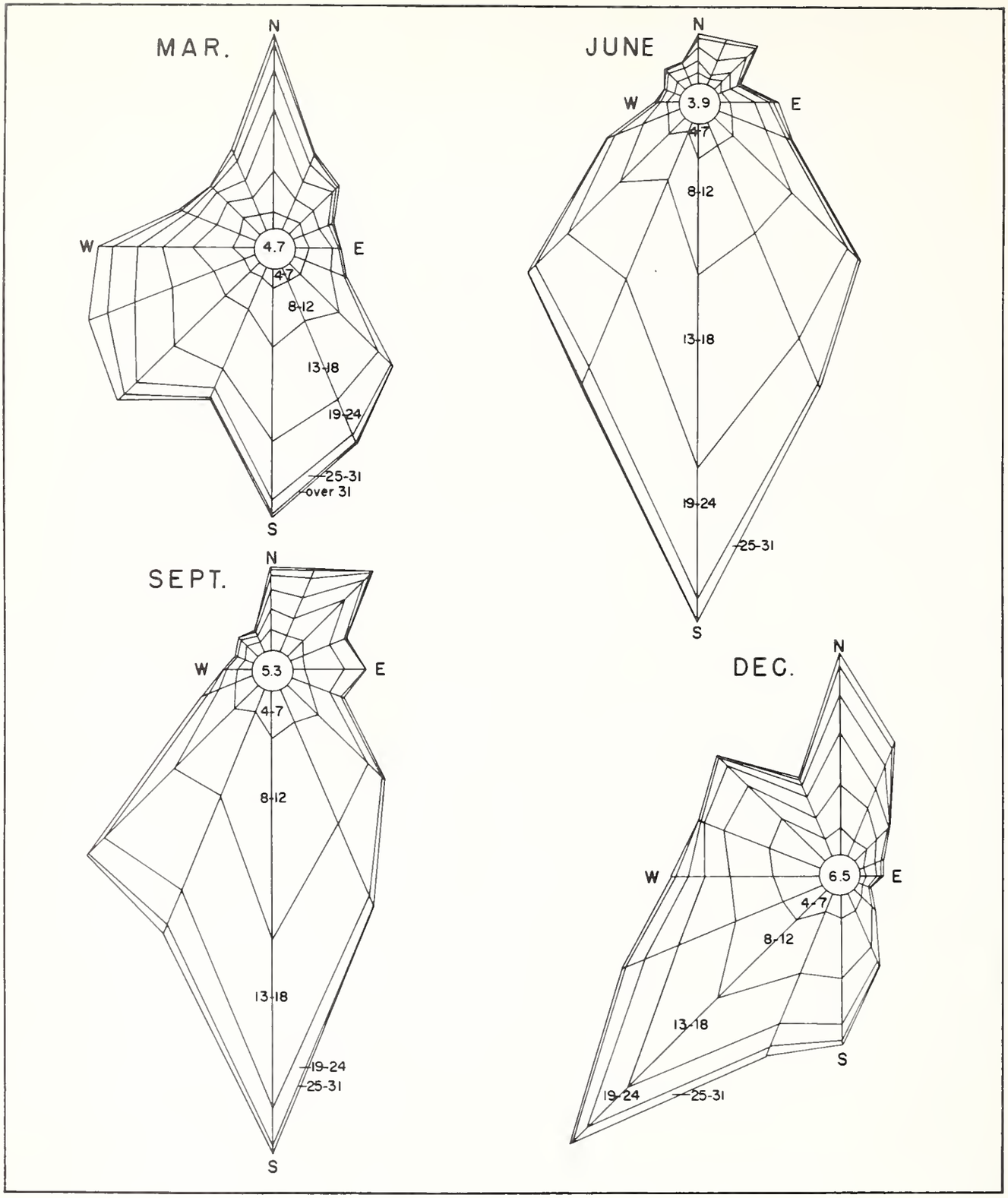
Direction	August									
N	0.5	2.6	4.1	5.3	3.1	0.7	0.2	0.1	16.7	14.1
NE	.6	2.7	4.8	4.1	1.4	.5	.1	.1	14.2	12.5
E	.5	3.2	5.5	3.9	1.4	.2	+	-----	14.9	11.5
SE	.5	3.6	8.1	8.2	4.8	1.2	+	-----	26.4	13.8
S	.4	3.7	9.6	9.3	4.1	1.0	.1	+	28.4	13.6
SW	.4	2.9	6.7	5.4	1.6	.3	.1	-----	17.5	12.3
W	.4	2.5	5.9	4.2	1.9	.2	-----	+	15.0	12.3
NW	.3	1.9	3.4	3.7	2.0	.4	.1	.1	11.9	13.7
Calm	3.9	-----	-----	-----	-----	-----	-----	-----	3.9	-----
Total	6.4	15.5	32.2	28.7	13.4	3.0	.5	.2	148.9	12.5

Direction	September									
N	0.4	1.6	4.4	5.6	3.1	1.1	0.1	0.2	16.6	15.1
NE	.2	2.4	4.8	3.5	1.9	.4	.1	.1	13.4	13.0
E	.6	3.3	4.8	2.9	1.1	.5	-----	-----	13.2	11.3
SE	.5	3.3	6.7	7.9	4.5	2.0	.3	-----	25.3	14.7
S	.4	4.0	7.7	8.6	5.0	2.2	.3	-----	28.2	14.6
SW	.6	3.5	5.8	5.7	2.3	.5	+	-----	18.4	12.4
W	.4	2.6	5.6	6.2	3.1	.4	+	-----	18.4	13.3
NW	.3	2.0	4.3	5.2	2.4	.8	.1	.1	15.0	14.2
Calm	3.6	-----	-----	-----	-----	-----	-----	-----	3.6	-----
Total	6.0	15.2	29.1	29.6	14.6	4.7	.5	.2	152.1	13.0

Direction	October									
N	0.4	1.9	4.3	6.9	3.8	1.3	0.2	0.1	18.9	15.4
NE	.5	2.2	4.0	4.3	1.8	.2	-----	-----	12.9	12.6
E	.3	1.9	4.0	2.5	.6	.2	-----	-----	9.5	11.4
SE	.4	2.8	4.8	5.9	2.6	.7	.1	+	17.4	13.7
S	.7	3.7	6.9	7.6	3.5	.9	.3	+	23.6	13.5
SW	.5	3.2	7.6	6.7	2.5	.1	.1	-----	20.6	12.4
W	.4	3.0	8.3	8.4	2.9	.3	+	-----	23.3	12.9
NW	.5	2.4	5.4	7.0	3.2	1.2	.3	.1	20.0	14.7
Calm	4.8	-----	-----	-----	-----	-----	-----	-----	4.8	-----
Total	7.2	14.5	29.3	32.2	13.0	3.0	.6	.2	151.0	12.7

Direction	November									
N	0.3	1.4	3.5	6.1	4.4	2.4	0.8	-----	18.9	17.3
NE	.3	1.1	2.4	2.4	1.4	.4	+	-----	8.0	13.6
E	.2	.8	1.7	1.0	.3	.1	-----	-----	4.1	11.2
SE	.2	1.3	2.4	2.7	.9	.4	.1	-----	8.0	13.3
S	.6	2.3	5.0	5.8	2.1	.7	.1	+	16.6	13.5
SW	.6	3.2	8.8	10.7	3.2	.2	+	-----	26.7	13.0
W	.7	3.0	12.6	15.0	5.6	.6	.2	.1	37.6	13.8
NW	.6	2.8	7.0	9.7	4.9	2.8	1.1	.1	28.8	15.9
Calm	3.0	-----	-----	-----	-----	-----	-----	-----	3.0	-----
Total	5.3	10.4	28.4	35.1	14.8	4.6	1.3	.1	151.7	13.8

Direction	December									
N	0.4	1.7	3.3	5.6	3.7	2.1	0.5	0.2	17.6	16.9
NE	.5	1.3	1.8	1.0	.7	.2	+	-----	5.4	11.2
E	.3	1.0	1.4	.8	.3	-----	-----	-----	3.9	9.9
SE	.2	1.2	2.2	3.0	1.6	.2	-----	-----	8.5	13.6
S	.4	1.8	4.3	5.0	1.8	.3	.1	-----	13.8	13.3
SW	.5	3.4	12.3	13.3	3.4	.1	.1	-----	33.1	13.0
W	.4	3.2	14.4	16.2	4.8	.7	.1	.1	40.0	13.8
NW	.3	2.1	6.3	8.8	4.9	2.2	.8	.5	25.9	16.7
Calm	2.4	-----	-----	-----	-----	-----	-----	-----	2.4	-----
Total	4.5	10.3	30.4	35.7	13.7	3.8	1.1	.6	150.6	13.9



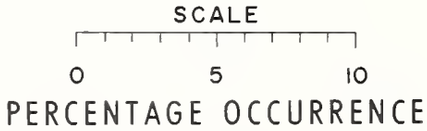


FIGURE 23.—Wind direction-speed polygons for Amarillo, Tex.

TABLE 7.—*Percentage frequency of occurrence of wind classified according to direction and speed, Amarillo, Tex., January 1950 to December 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	1.2	3.3	5.0	5.9	2.8	0.9	0.3	+	19.4	13.0	1.0	2.2	4.2	5.7	4.6	2.5	0.7	0.3	21.4	16.3	0.9	2.2	3.9	4.8	3.8	2.2	0.8	0.1	18.6	15.4
NE	.7	2.6	3.8	4.2	1.5	.5	.2	+	13.5	12.8	.5	.9	2.4	2.9	1.5	1.2	.2	+	9.7	14.6	.6	1.8	2.6	2.7	1.3	.6	.2	----	9.9	13.7
E	.4	1.9	1.6	.5	.2	+	----	----	4.5	8.0	.2	.8	2.0	.9	.1	----	----	----	4.0	8.8	.7	1.5	3.2	1.5	.4	.1	----	----	7.4	10.7
SE	.5	2.1	3.3	1.9	.4	.1	----	----	8.2	9.3	.4	1.5	5.4	3.5	.6	.4	----	----	11.8	11.0	.6	1.9	5.9	7.5	2.6	.4	.1	+	19.1	13.4
S	.5	2.2	7.4	8.2	2.9	.8	.1	----	22.1	13.2	.6	2.2	8.3	8.7	3.0	1.2	.2	----	24.1	13.6	.6	2.1	6.6	11.7	5.6	1.6	.4	+	28.5	15.5
SW	.9	4.2	11.0	14.8	7.4	2.6	.5	----	41.4	14.6	.7	3.8	10.0	10.8	5.4	1.8	.2	----	32.8	14.0	.5	1.5	4.9	8.6	5.4	2.7	1.3	.2	25.2	17.4
W	1.1	4.4	6.1	6.2	3.3	1.0	.3	----	22.4	13.0	1.3	4.7	7.1	3.8	2.4	1.3	.2	----	20.7	11.8	.6	2.3	4.7	4.5	3.5	2.9	1.4	.5	20.6	17.3
NW	1.2	4.4	4.5	2.0	.5	.2	+	----	12.9	8.8	1.2	4.5	6.7	2.6	1.4	.6	.2	.2	17.3	11.2	.8	2.7	3.3	2.8	1.9	.8	.2	.1	12.6	12.8
Calm	1.3	----	----	----	----	----	----	----	1.3	----	1.4	----	----	----	----	----	----	----	1.4	----	1.0	----	----	----	----	----	----	----	1.0	----
Total	5.9	17.1	29.3	29.8	13.0	4.1	.9	+	145.7	12.8	5.6	14.3	32.3	27.1	13.2	6.0	1.2	.3	143.2	13.3	4.7	11.2	24.6	30.9	17.2	7.7	3.0	.7	142.9	15.1
	April										May										June									
N	0.6	2.5	3.8	5.8	4.0	2.3	0.9	0.1	20.0	16.0	1.0	2.4	3.7	5.9	3.2	1.4	0.3	0.1	18.0	14.8	0.3	1.2	1.3	1.7	1.3	0.4	0.1	----	6.2	13.4
NE	.5	1.5	3.6	4.4	2.3	1.3	.3	----	14.0	14.1	.7	1.6	2.7	4.9	2.3	1.2	.2	----	13.5	14.8	.5	1.1	1.3	2.3	1.6	.3	.1	----	7.2	12.6
E	.3	1.3	3.3	2.1	.8	.2	----	----	8.0	10.9	.5	2.0	3.1	3.0	1.6	.7	+	+	10.8	11.7	.5	1.2	3.3	2.2	.6	.3	+	----	8.2	11.2
SE	.4	2.3	7.1	8.2	3.4	.4	+	----	21.8	13.5	.6	3.2	7.0	8.2	3.4	1.6	.2	----	24.1	13.2	.8	2.9	10.2	10.4	3.2	.6	+	----	28.2	12.6
S	.6	2.1	6.8	10.6	6.6	1.4	.2	----	28.3	15.3	.5	3.2	8.1	10.4	5.9	2.1	.6	.1	30.8	14.7	.8	3.3	12.7	20.1	13.2	2.3	.2	+	52.5	15.3
SW	.6	1.7	4.9	9.1	4.9	1.9	.3	.1	23.6	15.8	.5	2.9	7.4	7.4	4.0	1.7	.5	.1	24.6	14.5	.6	2.2	7.1	10.1	7.2	1.5	.2	0.1	29.0	15.4
W	.9	2.2	4.4	4.6	2.1	.7	+	+	14.8	12.9	.8	3.1	3.5	2.3	1.4	.9	.3	.2	12.5	12.1	.4	1.6	2.0	1.7	.5	.1	+	+	6.4	11.9
NW	.8	2.3	3.6	3.2	1.3	.6	.1	+	11.8	12.1	.8	2.8	2.3	1.3	.4	.2	+	.1	7.9	9.7	.4	1.2	1.4	.5	.1	----	----	----	3.6	8.6
Calm	.6	----	----	----	----	----	----	----	.6	----	.8	----	----	----	----	----	----	----	.8	----	.7	----	----	----	----	----	----	----	.7	----
Total	3.9	11.4	26.2	33.5	17.6	6.0	1.4	.1	142.9	14.4	4.6	14.8	26.3	30.8	15.6	6.4	1.4	.3	143.0	13.9	3.9	10.6	27.8	34.2	19.2	3.9	.3	.1	142.0	13.9
	July										August										September									
N	0.9	1.7	1.8	1.4	0.4	0.4	----	----	6.6	10.3	0.9	2.2	1.9	1.7	0.5	+	----	----	7.2	10.0	0.8	2.3	2.1	2.2	1.8	0.7	0.2	----	10.1	13.3
NE	.8	2.0	2.9	2.2	.3	.3	0.1	----	8.5	10.7	.9	2.1	3.0	2.0	.6	+	----	----	8.8	9.8	.6	2.4	5.0	3.2	1.5	.5	.1	----	13.3	12.6
E	.8	1.7	2.7	2.1	.5	.2	.1	----	8.0	10.6	.6	2.3	2.9	1.6	.2	----	----	----	7.6	9.6	.4	1.9	4.4	2.3	.2	----	----	----	9.2	10.1
SE	1.5	6.4	12.9	8.5	1.7	.2	+	----	31.3	10.7	1.2	5.6	10.9	5.6	.6	----	----	----	24.0	10.0	.6	4.5	9.7	5.5	.7	+	----	----	21.0	10.3
S	1.4	7.4	18.3	18.9	5.7	.6	+	----	52.4	12.4	1.4	6.9	20.8	17.0	4.3	0.4	----	----	50.8	11.9	.7	5.0	19.3	16.8	4.1	.9	----	----	46.8	12.6
SW	.6	3.5	7.4	9.8	2.8	.5	----	----	24.8	12.7	1.2	3.1	8.9	9.9	4.4	.4	----	----	27.8	12.8	1.0	3.6	9.2	10.2	3.2	.6	----	----	27.9	12.4
W	.7	1.7	1.7	1.2	.1	.1	----	----	5.6	8.8	.7	1.6	1.8	1.1	.2	----	----	----	5.4	9.3	.9	2.1	1.8	1.0	.3	----	----	----	6.0	8.8
NW	.7	1.3	.7	.3	.1	.1	----	----	3.1	7.6	1.3	1.8	.9	.5	.2	----	----	----	4.7	7.6	.8	1.7	1.2	.5	.1	.1	----	----	4.4	8.3
Calm	1.3	----	----	----	----	----	----	----	1.3	----	1.6	----	----	----	----	----	----	----	1.6	----	1.2	----	----	----	----	----	----	----	1.2	----
Total	6.7	18.1	34.0	31.0	8.4	1.6	.1	----	141.6	11.4	8.1	18.6	37.0	27.9	7.5	.5	----	----	137.9	10.9	5.3	16.7	38.1	29.8	8.1	1.9	.2	----	139.9	11.7
	October										November										December									
N	1.2	3.4	4.1	4.6	2.7	0.8	0.1	----	16.9	12.4	1.4	3.8	5.1	6.3	3.5	1.3	0.3	+	21.8	13.1	1.5	2.9	4.9	4.6	3.5	2.6	0.8	0.2	21.0	14.8
NE	1.0	2.7	3.9	5.2	2.3	.7	.1	----	15.9	12.8	.9	2.6	3.5	3.4	1.7	.5	.1	----	12.6	12.1	.9	1.8	3.0	2.1	1.4	.9	.2	.1	10.7	13.6
E	.5	1.9	2.3	1.8	.3	.1	+	----	6.9	10.4	.3	1.6	2.0	.9	.2	----	----	----	5.0	9.1	.5	.7	1.4	.6	.2	----	----	----	3.4	9.8
SE	.8	3.5	7.2	4.0	1.1	.3	----	----	16.9	11.0	.7	1.9	4.5	2.0	.9	.6	----	----	10.6	11.1	.5	1.6	3.0	1.1	.2	----	----	----	6.5	9.3
S	.8	4.3	12.6	13.5	4.6	.9	----	----	36.6	13.1	.9	2.8	11.8	7.6	2.7	.9	----	----	26.5	12.4	.6	2.9	8.0	5.6	2.2	.7	.1	----	20.1	12.6
SW	.9	4.3	8.0	10.7	4.7	.8	+	----	29.5	13.0	1.3	4.5	11.5	10.1	3.8	.9	+	----	32.1	12.4	1.0	4.8	11.0	11.4	5.5	2.5	.4	----	36.7	14.2
W	1.3	3.8	2.8	2.1	.7	.3	----	----	11.0	8.4	1.7	5.2	5.8	3.9	1.0	.5	+	----	18.1	9.8	1.3	6.9	6.7	5.1	2.7	1.7	.4	----	24.7	12.0
NW	.9	3.5	2.3	.9	.3	+	----	----	7.8	7.8	1.7	5.6	5.9	3.0	.7	.2	+	----	17.2	9.3	1.2	6.4	5.6	3.5	1.4	.5	.2	----	18.7	10.1
Calm	1.4	----	----	----	----	----	----	----	1.4	----	1.3	----	----	----	----	----	----	----	1.3	----	1.1	----	----	----	----	----	----	----	1.1	----
Total	6.7	19.3	29.7	30.2	11.6	2.3	.1	----	142.9	11.9	7.5	18.8	34.3	25.8	10.0	3.1	.4	+	145.2	11.7	6.5	19.5	30.0	24.3	12.1	6.1	1.4	.2	142.9	12.8

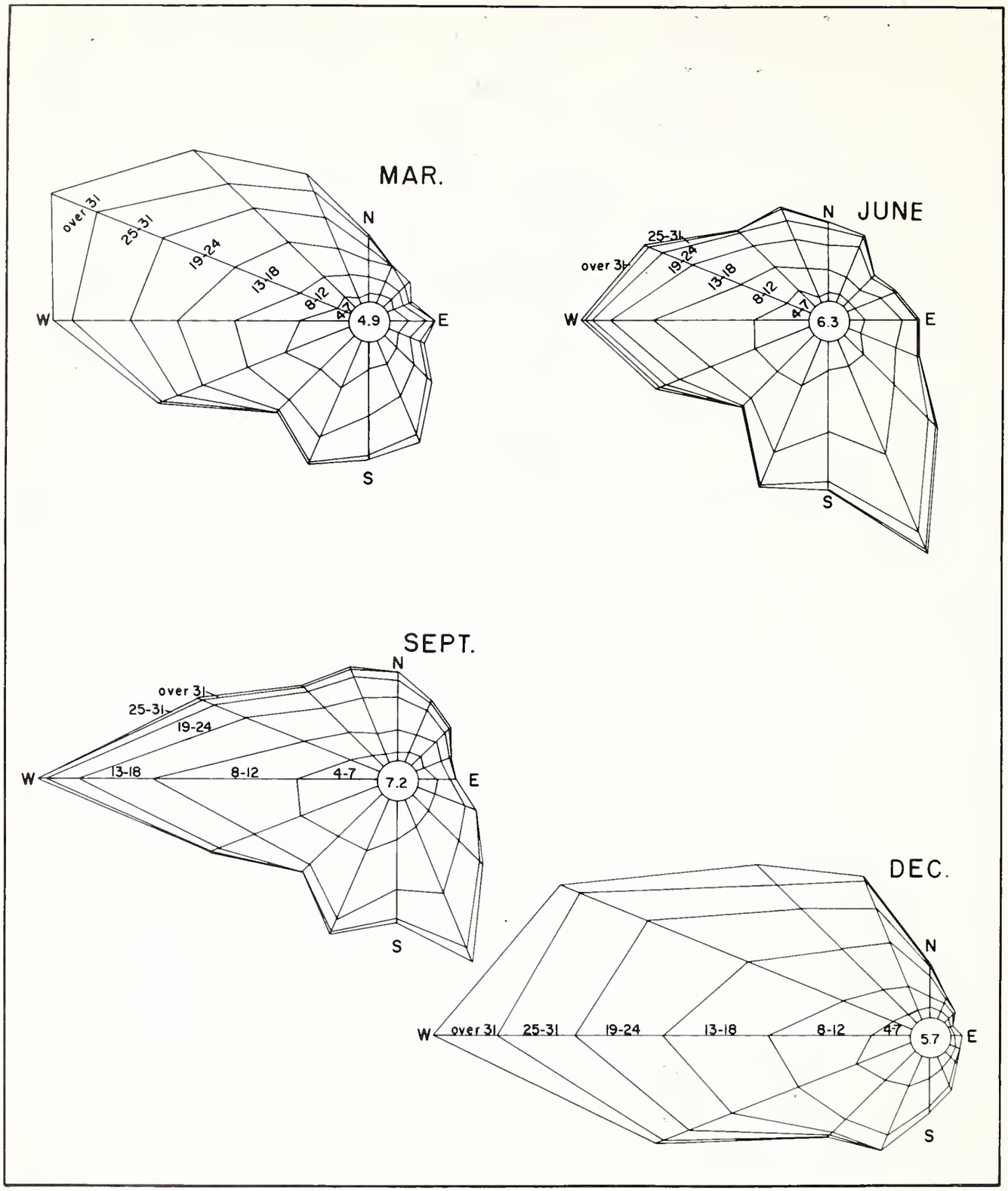


FIGURE 24.—Wind direction-speed polygons for Cheyenne, Wyo.

TABLE 8.—*Percentage frequency of occurrence of wind classified according to direction and speed, Cheyenne, Wyo., January 1950 to December 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	0.6	2.0	1.8	0.9	0.7	0.2	+	6.6	14.0
NE	.6	.5	1.2	.5	.1	-----	-----	-----	2.8	8.5
E	.6	.7	1.1	.1	+	-----	-----	-----	2.7	7.4
SE	.8	1.6	2.0	1.0	.0	-----	-----	-----	5.7	8.4
S	1.2	3.2	6.0	3.1	.6	+	-----	-----	14.0	10.1
SW	1.5	6.3	11.3	9.2	5.3	3.1	1.0	0.1	37.7	14.0
W	1.4	4.7	9.6	13.4	12.7	10.5	4.8	1.2	58.3	18.8
NW	.7	1.5	4.0	6.1	6.0	4.2	1.4	.3	24.2	17.9
Calm	.3	-----	-----	-----	-----	-----	-----	-----	.3	-----
Total	5.2	12.9	24.6	22.5	16.7	11.9	5.2	1.2	152.3	15.9

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.2	0.6	2.1	3.1	3.2	1.5	1.4	0.1	12.1	18.6
NE	.3	.3	1.1	.7	.5	.2	+	-----	3.1	12.7
E	.4	.6	.7	.3	.1	+	-----	-----	2.1	7.7
SE	.6	1.0	2.3	.8	.1	-----	-----	-----	4.7	8.9
S	.5	2.3	5.8	2.4	.1	-----	-----	-----	11.1	9.3
SW	1.0	5.9	8.5	5.0	2.6	1.7	.4	.1	25.2	12.4
W	1.0	5.7	10.4	14.2	11.5	8.6	3.9	.7	55.9	17.8
NW	.7	1.9	5.1	9.9	10.0	6.1	2.6	.1	36.6	18.6
Calm	.1	-----	-----	-----	-----	-----	-----	-----	.1	-----
Total	3.4	12.5	24.0	23.2	18.4	12.0	5.7	.8	150.9	16.3

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.2	1.2	2.8	3.0	3.0	1.9	0.6	0.5	13.3	18.0
NE	.4	1.3	1.6	1.5	1.2	.1	+	-----	6.1	12.4
E	.5	1.7	1.8	1.2	.3	-----	-----	-----	5.5	9.4
SE	.5	2.5	3.4	3.4	.9	+	-----	-----	10.7	11.0
S	1.1	5.0	6.5	5.3	.7	-----	-----	-----	18.5	10.1
SW	1.9	8.1	6.6	4.3	1.5	.8	.3	+	23.4	10.2
W	1.5	6.3	7.0	8.2	7.2	6.5	2.8	.8	40.3	16.9
NW	.5	1.7	4.5	7.0	7.6	6.5	3.7	1.9	33.6	21.0
Calm	.3	-----	-----	-----	-----	-----	-----	-----	.3	-----
Total	4.8	18.5	23.2	22.1	14.2	10.2	5.0	2.1	151.7	15.3

Direction	April									
N	0.6	1.8	4.0	6.4	5.7	3.1	0.7	0.1	22.4	16.7
NE	.6	1.3	2.2	2.2	1.2	.3	+	-----	7.6	12.1
E	.5	1.4	2.6	2.0	.4	.1	-----	-----	6.9	10.5
SE	1.1	1.8	4.2	4.3	1.7	.4	+	-----	13.4	12.3
S	1.6	3.2	6.4	5.2	1.7	.3	+	-----	18.3	11.5
SW	2.6	5.1	6.0	4.2	1.5	.4	+	-----	19.7	9.9
W	1.9	4.4	8.1	7.0	5.3	3.0	1.3	.2	31.2	14.7
NW	1.0	2.4	5.8	8.8	7.0	5.2	1.8	.4	32.3	17.9
Calm	.4	-----	-----	-----	-----	-----	-----	-----	.4	-----
Total	6.8	14.3	26.3	25.9	15.6	8.1	2.6	.5	152.2	14.2

Direction	May									
N	0.7	1.6	4.3	5.4	3.4	1.9	0.5	-----	17.8	15.4
NE	.4	1.6	4.2	3.3	1.2	.4	+	-----	11.2	12.6
E	.6	2.1	4.2	2.9	.6	.1	-----	-----	10.5	10.9
SE	.9	2.7	7.2	6.5	1.6	.1	-----	-----	19.0	11.8
S	1.1	4.6	7.9	5.9	1.0	.1	-----	-----	20.6	10.6
SW	2.2	7.2	5.1	3.1	.9	.3	.1	-----	18.8	9.1
W	1.6	6.1	7.0	6.7	4.0	1.9	.8	.1	28.3	13.4
NW	.8	2.6	6.0	7.9	4.9	3.1	1.1	.1	26.5	16.0
Calm	.7	-----	-----	-----	-----	-----	-----	-----	.7	-----
Total	6.4	18.7	30.4	26.3	11.5	5.0	1.5	.1	153.4	12.6

Direction	June									
N	0.6	1.2	3.6	4.3	2.4	1.0	0.1	-----	13.1	14.0
NE	.5	1.1	3.1	3.2	.8	.1	+	-----	8.8	12.4
E	.6	1.8	4.9	2.5	.4	-----	-----	-----	10.3	10.1
SE	1.0	3.3	8.6	7.6	1.6	.1	-----	-----	22.1	11.6
S	1.2	5.2	11.1	8.3	1.5	.1	-----	-----	27.3	11.0
SW	2.1	7.7	7.6	3.8	.8	.3	.2	-----	22.5	9.1
W	2.1	6.6	9.4	6.0	3.0	1.3	.5	.1	29.0	11.8
NW	1.0	2.6	5.5	5.5	3.4	1.4	.2	.1	19.6	14.0
Calm	.6	-----	-----	-----	-----	-----	-----	-----	.6	-----
Total	6.3	19.8	35.4	26.2	8.9	2.6	.6	.1	153.3	11.6

Direction	July									
N	1.0	1.9	2.7	3.4	2.3	0.7	0.2	+	12.3	13.8
NE	.9	1.6	3.4	2.4	.9	.2	+	-----	9.6	11.6
E	.9	2.7	5.2	1.8	.3	.1	-----	-----	11.0	9.2
SE	1.4	3.8	8.8	4.9	.6	.1	-----	-----	19.7	10.1
S	2.7	6.5	10.9	5.2	.5	+	-----	-----	25.9	9.3
SW	4.2	11.2	7.8	2.3	.7	+	-----	-----	26.2	7.3
W	3.4	8.1	9.6	5.3	2.0	.2	-----	-----	28.6	9.6
NW	1.3	2.8	4.8	4.7	2.3	.3	.1	+	16.4	12.6
Calm	.4	-----	-----	-----	-----	-----	-----	-----	.4	-----
Total	11.1	25.3	36.2	19.7	6.2	1.3	.2	+	150.1	10.0

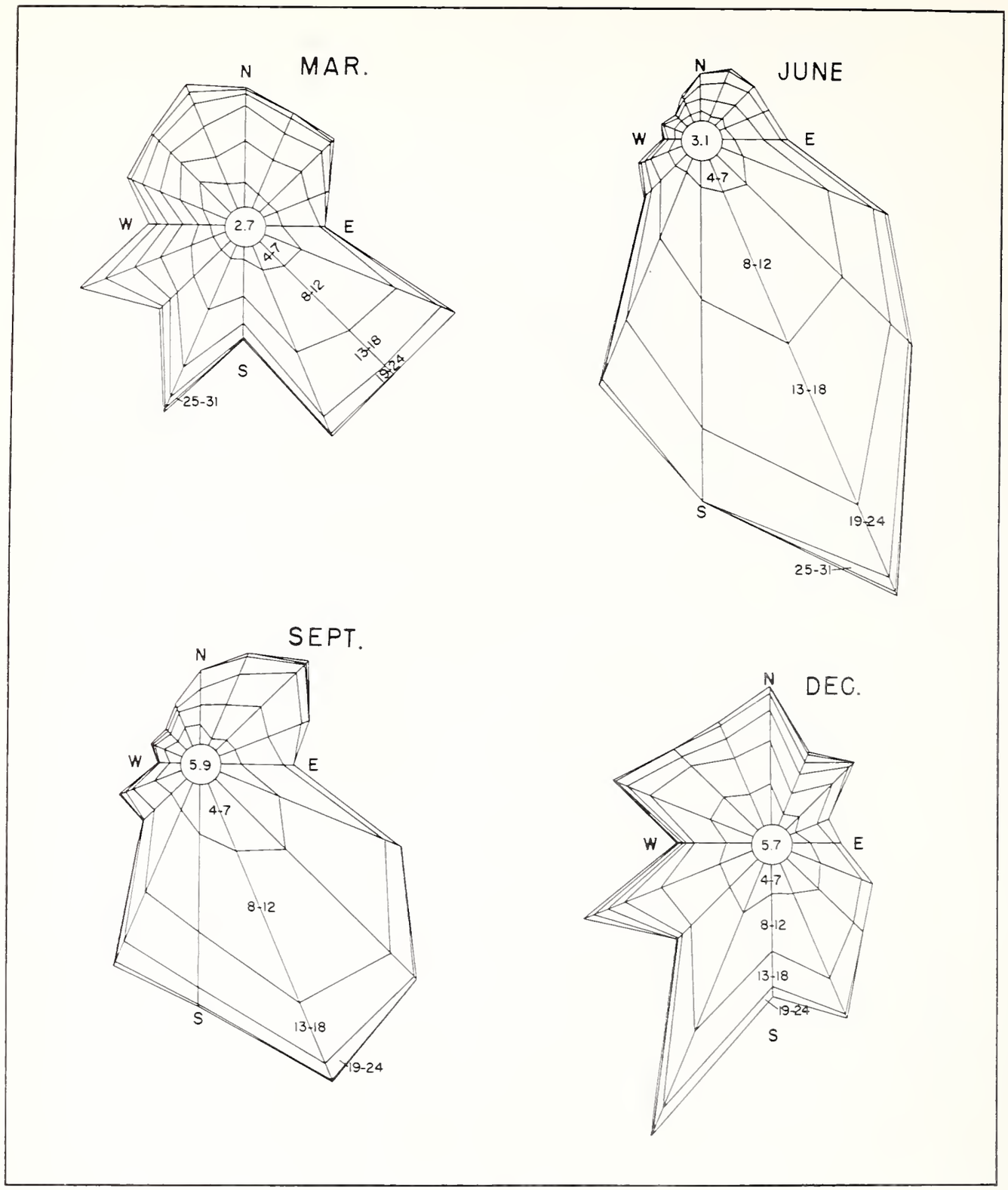
Direction	August									
N	0.9	1.3	3.0	2.9	1.9	0.2	0.1	-----	10.4	12.7
NE	.6	1.7	2.6	1.4	.5	+	+	-----	6.9	10.3
E	.7	2.2	3.4	1.3	.2	+	-----	-----	7.9	9.3
SE	1.3	3.7	8.4	4.2	.6	-----	-----	-----	18.1	10.0
S	2.2	6.2	10.6	4.5	.6	+	-----	-----	24.1	9.4
SW	2.9	10.0	8.0	2.5	.4	+	-----	-----	23.9	7.7
W	2.6	8.6	13.3	7.5	2.4	.2	+	-----	34.5	10.1
NW	1.4	2.7	7.7	6.3	2.7	.4	+	-----	21.3	12.2
Calm	.8	-----	-----	-----	-----	-----	-----	-----	.8	-----
Total	9.5	24.8	38.9	20.1	6.0	.7	.1	-----	147.9	9.9

Direction	September									
N	1.0	1.3	3.2	4.8	2.3	0.9	0.1	-----	13.4	13.6
NE	.9	1.6	2.8	2.3	.7	.2	-----	-----	8.5	10.6
E	1.0	2.3	3.1	1.2	.2	+	-----	-----	7.8	8.2
SE	1.2	3.4	7.3	4.7	.9	+	-----	-----	17.5	10.4
S	1.3	5.9	9.4	4.9	1.0	+	-----	-----	22.6	10.0
SW	2.3	9.5	7.8	3.0	.6	.2	+	-----	23.3	8.3
W	1.8	9.3	11.5	8.4	3.5	1.1	.2	+	35.9	11.3
NW	1.0	2.7	5.1	6.6	3.8	1.2	.3	-----	20.7	14.2
Calm	.3	-----	-----	-----	-----	-----	-----	-----	.3	-----
Total	7.2	24.2	33.9	23.5	8.5	2.4	.4	+	150.0	11.1

Direction	October									
N	0.7	1.0	3.4	3.3	2.2	0.9	0.1	-----	11.6	14.2
NE	.5	1.2	2.0	1.0	.4	+	+	-----	5.2	10.2
E	.4	1.5	2.0	.5	.1	-----	-----	-----	4.5	8.8
SE	.9	2.1	4.5	3.5	.4	-----	-----	-----	11.4	10.8
S	1.5	5.0	7.8	4.9	.3	-----	-----	-----	19.6	9.6
SW	3.1	11.1	9.2	3.6	1.3	.2	+	-----	28.5	8.5
W	2.5	10.3	15.6	9.8	4.2	1.5	.3	.2	44.4	11.6
NW	1.2	2.6	7.9	8.4	4.2	2.3	.4	.2	27.2	14.4
Calm	.5	-----	-----	-----	-----	-----	-----	-----	.5	-----
Total	7.5	23.0	34.6	22.6	8.3	3.1	.6	.2	152.9	11.2

Direction	November									
N	0.6	0.9	3.1	4.1	2.9	1.1	0.1	-----	12.8	15.6
NE	.4	.4	.9	1.0	.3	-----	-----	-----	3.1	10.8
E	.5	.4	.5	.2	-----	-----	-----	-----	1.6	6.8
SE	1.2	1.6	2.2	1.5	.3	-----	-----	-----	6.7	8.3
S	2.3	4.3	7.5	2.6	.4	-----	-----	-----	17.0	8.5
SW	3.6	8.0	10.6	4.4	1.1	.5	.2	+	28.5	9.2
W	2.4	6.8	12.7	12.1	7.4	5.0	2.0	.6	48.9	15.2
NW	.9	2.6	5.7	10.5	9.0	4.5	1.0	.2	34.3	17.1
Calm	.3	-----	-----	-----	-----	-----	-----	-----	.3	-----
Total	8.0	16.7	28.7	23.0	13.6	7.2	2.2	.6	153.2	13.5

Direction	December									
N	0.6	1.3	2.1	3.5	2.2	1.6	0.2	-----	11.6	15.9
NE	.3	.8	.8	.3	.1	+	-----	-----	2.2	8.1
E	.6	.6	.6	+	-----	-----	-----	-----	1.8	5.8
SE	.8	1.3	1.4	.4	+	-----	-----	-----	3.9	6.7
S	1.0	3.1	4.8	1.5	.1	-----	-----	-----	10.5	8.0
SW	1.9	6.4	8.4	5.2	2.4	1.3	.3	.1	26.0	11.5
W	1.5	5.7	10.5	13.3	11.7	8.5	3.7	.8	55.7	17.7
NW	.8	2.1	5.5	10.0	9.8	6.6	1.9	.6	37.3	18.9
Calm	.8	-----	-----	-----	-----	-----	-----	-----	.8	-----
Total	5.7	14.1	23.1	22.3	16.9	11.8	4.7	1.4	149.8	15.8



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PERCENTAGE OCCURRENCE

FIGURE 25.—Wind direction-speed polygons for Childress, Tex.

TABLE 9.—*Percentage frequency of occurrence of wind classified according to direction and speed, Childress, Tex., November 1950 to October 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.6	3.4	6.3	5.8	2.5	0.9	+	+	19.4	13.0
NE	.4	2.1	6.2	4.6	1.3	.2	+	+	15.0	12.3
E	.4	2.5	5.6	1.4	.2	-----	-----	-----	10.1	9.6
SE	.6	4.6	10.2	2.3	.2	-----	-----	-----	17.8	9.4
S	.5	4.0	12.6	7.9	2.6	.4	0.1	-----	27.9	12.1
SW	.8	4.1	10.8	7.5	3.1	.9	.2	-----	27.3	12.6
W	.5	4.2	5.8	3.6	1.6	.6	.3	0.1	16.6	12.1
NW	.9	4.8	6.0	3.4	1.8	.5	.1	.1	17.5	11.3
Calm	2.1	-----	-----	-----	-----	-----	-----	-----	2.1	-------
Total	5.6	20.5	40.4	22.8	7.9	2.3	.3	.1	154.0	11.3

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.6	3.0	6.0	5.1	3.5	1.6	0.1	+	20.1	14.1
NE	.3	1.8	4.4	3.2	1.1	.3	-----	-----	11.1	12.3
E	.4	2.5	6.5	2.2	.6	.1	-----	-----	12.2	10.4
SE	.6	3.6	11.0	4.0	1.8	.5	-----	-----	21.4	11.4
S	.3	2.9	10.5	6.2	3.0	.9	+	-----	23.9	12.9
SW	.6	3.9	8.5	6.2	2.8	.9	.1	0.1	23.1	12.9
W	.7	4.8	6.6	4.0	1.5	.9	.2	.1	18.8	11.8
NW	.8	5.3	6.9	3.8	2.5	1.1	.2	.1	20.7	12.2
Calm	1.4	-----	-----	-----	-----	-----	-----	-----	1.4	-------
Total	4.7	19.1	39.6	21.4	10.3	4.3	.4	.2	152.7	12.0

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	3.1	5.2	4.8	2.6	1.1	0.4	0.1	17.6	14.2
NE	.2	2.0	5.6	3.7	1.6	.4	.1	-----	13.6	12.9
E	.2	3.3	8.3	3.9	1.2	.1	-----	-----	17.0	11.2
SE	.3	4.8	13.6	8.0	2.3	.1	-----	-----	29.2	11.6
S	.3	2.6	8.8	7.7	3.2	.9	.2	-----	23.6	13.5
SW	.2	1.9	5.6	5.6	3.3	2.6	.9	.7	20.9	17.4
W	.3	2.4	2.9	3.3	2.9	2.6	.9	1.0	16.1	18.8
NW	.4	4.5	4.0	3.2	2.9	1.6	.6	.1	17.3	14.2
Calm	1.1	-----	-----	-----	-----	-----	-----	-----	1.1	-------
Total	2.7	16.4	34.9	25.2	12.3	5.6	1.9	1.0	156.4	13.7

Direction	April									
N	0.2	2.2	4.5	5.4	3.0	1.4	0.6	0.3	17.6	15.9
NE	.3	1.8	5.2	4.7	2.4	1.3	.5	.1	16.2	15.1
E	.3	3.1	9.1	5.1	1.8	.5	.1	+	20.0	12.8
SE	.4	4.2	12.2	9.4	3.6	1.1	.2	-----	31.0	13.1
S	.1	2.4	8.6	9.7	5.1	1.6	.2	.1	27.8	14.8
SW	.1	1.8	4.9	5.2	2.7	1.1	.2	.1	16.2	14.9
W	.3	1.8	3.1	3.1	1.5	.9	.3	.1	10.9	14.4
NW	.3	2.3	3.9	3.6	2.4	1.3	.4	.1	14.1	14.9
Calm	1.6	-----	-----	-----	-----	-----	-----	-----	1.6	-------
Total	3.0	13.1	32.7	29.2	14.2	6.0	1.4	.4	155.4	14.0

Direction	May									
N	0.3	2.8	6.3	5.1	2.1	0.8	+	-----	17.3	12.8
NE	.2	2.2	6.5	5.1	1.8	.5	0.1	0.1	16.5	13.1
E	.2	3.2	7.5	6.0	1.8	.5	-----	+	19.1	12.5
SE	.3	5.3	13.2	9.4	4.1	2.0	.3	-----	34.8	13.4
S	.3	3.1	11.0	9.7	5.0	2.3	.2	-----	31.5	14.4
SW	.3	2.2	4.7	4.7	2.6	1.0	.3	.1	15.8	14.4
W	.2	1.5	2.3	1.2	.8	.5	.3	.2	7.0	14.3
NW	.4	3.1	3.7	2.0	.7	.2	.1	.1	10.2	10.9
Calm	2.0	-----	-----	-----	-----	-----	-----	-----	2.0	-------
Total	3.7	15.6	35.8	27.1	11.9	4.8	.8	.3	154.2	12.9

Direction	June									
N	0.3	1.2	2.1	1.9	1.2	0.1	-----	-----	6.8	12.7
NE	.4	1.1	2.9	2.7	1.3	.1	+	-----	8.6	11.8
E	.4	2.0	7.1	3.9	1.2	.2	+	-----	14.8	11.9
SE	.5	4.8	18.8	14.1	5.7	1.1	.1	+	45.1	13.1
S	.4	3.7	16.9	18.9	10.7	1.7	.1	0.1	52.5	14.7
SW	.1	2.3	5.3	5.2	3.8	.4	.1	.1	17.2	14.3
W	.1	1.5	1.8	.7	.3	.1	+	+	4.5	10.5
NW	.2	1.2	1.4	.6	.1	.1	+	+	3.6	9.9
Calm	1.2	-----	-----	-----	-----	-----	-----	-----	1.2	-------
Total	3.1	12.1	36.4	30.5	15.3	2.4	.2	.1	154.3	13.1

Direction	July									
N	0.5	2.2	1.9	0.8	0.5	0.1	+	0.1	6.1	10.1
NE	.5	2.5	3.7	1.9	.9	.3	-----	.1	9.9	11.3
E	.6	5.1	11.5	5.1	1.0	.3	+	-----	23.7	10.7
SE	1.2	11.7	22.5	10.2	2.2	.3	-----	-----	48.1	10.5
S	.7	7.6	15.8	11.3	3.4	.3	-----	-----	39.1	11.7
SW	.3	3.6	5.5	4.5	1.3	.2	-----	-----	15.5	11.5
W	.2	2.0	1.8	.8	.1	+	-----	-----	5.0	8.9
NW	.3	1.9	1.0	.2	.1	+	-----	-----	3.5	7.6
Calm	3.0	-----	-----	-----	-----	-----	-----	-----	3.0	-------
Total	6.0	24.3	40.6	21.8	6.1	1.1	0.1	.1	153.9	10.4

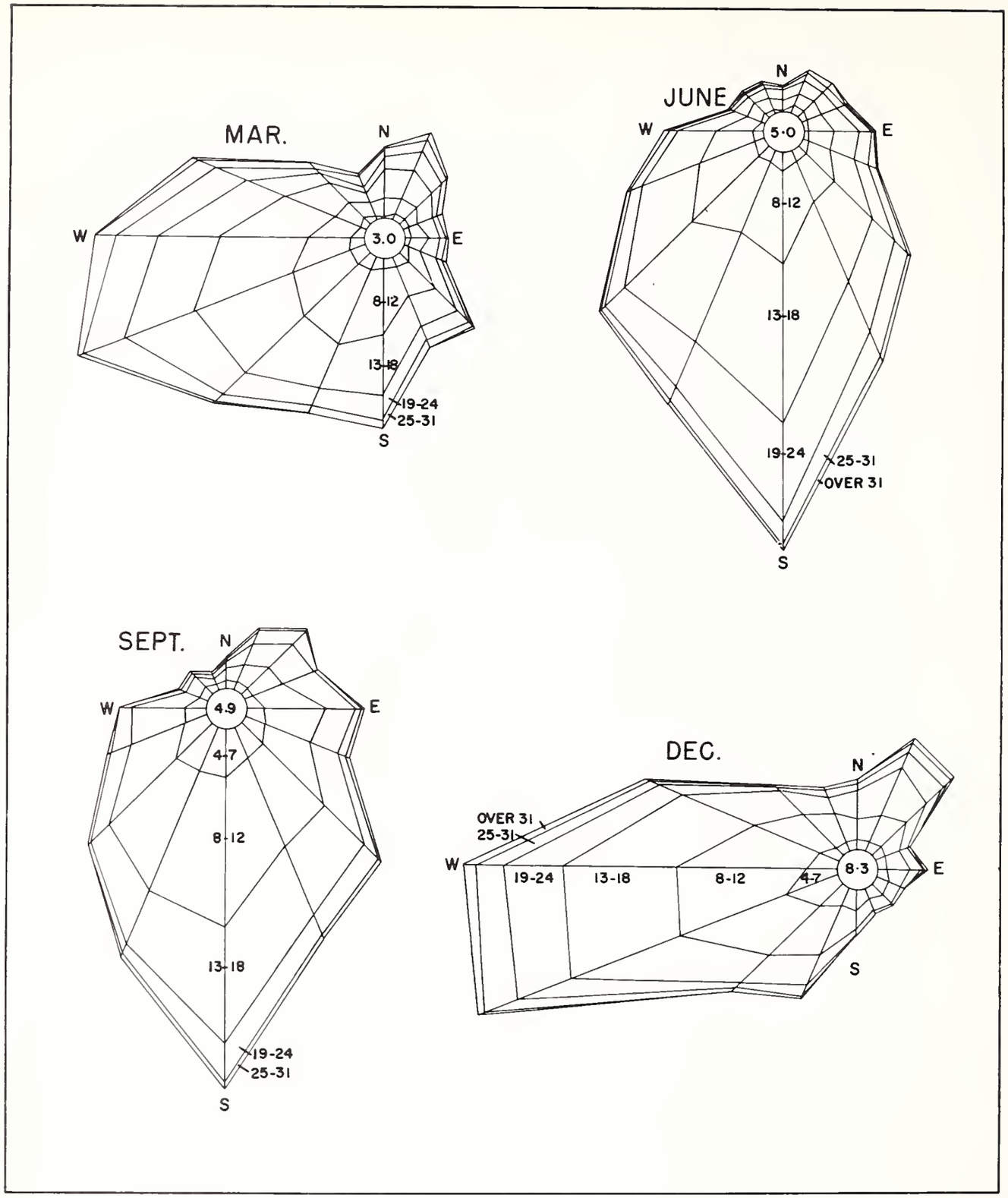
Direction	August									
N	0.6	2.8	2.7	0.9	0.4	0.1	-----	-----	7.6	9.1
NE	.3	2.8	5.3	2.8	.8	.1	-----	-----	12.2	11.0
E	.4	5.4	9.5	4.0	.4	.1	-----	-----	19.9	9.9
SE	.6	11.3	22.5	5.7	.5	.2	-----	-----	40.8	9.5
S	.3	8.0	21.4	8.5	1.6	.3	-----	-----	40.0	10.7
SW	.3	3.5	8.7	5.2	1.7	.2	-----	-----	19.6	11.6
W	.2	1.9	2.5	1.2	.5	.1	-----	-----	6.3	10.1
NW	.2	2.3	1.7	.6	.1	.1	-----	-----	5.1	8.5
Calm	2.3	-----	-----	-----	-----	-----	-----	-----	2.3	-------
Total	4.7	25.5	47.5	18.3	3.7	.7	-----	-----	153.8	9.9

Direction	September									
N	0.3	2.5	3.6	2.6	2.0	0.2	-----	-----	11.2	12.2
NE	.4	2.0	5.8	5.6	1.8	.3	0.1	0.1	16.1	12.9
E	.7	4.7	9.2	3.0	.5	+	-----	-----	18.1	9.8
SE	.7	11.3	20.4	5.6	1.1	.1	-----	-----	39.2	9.7
S	.9	7.3	16.8	8.6	2.8	.4	+	-----	36.9	11.3
SW	.8	3.6	6.4	3.7	1.4	.4	+	-----	16.4	11.3
W	.5	2.6	2.1	.6	.4	.1	-----	-----	6.3	9.0
NW	.5	2.5	1.8	.6	.3	.1	-----	-----	5.8	8.4
Calm	2.6	-----	-----	-----	-----	-----	-----	-----	2.6	-------
Total	5.9	24.3	42.7	19.7	6.4	.9	.1	.1	152.6	10.4

Direction	October									
N	0.7	3.2	5.8	4.6	2.1	0.3	+	-----	16.7	12.2
NE	.4	2.0	5.4	4.7	2.0	.2	-----	-----	14.8	12.8
E	.6	3.8	6.1	1.9	.3	+	-----	-----	12.8	9.3
SE	.9	7.4	15.6	6.1	1.6	.1	-----	-----	31.7	10.3
S	.6	5.4	14.4	9.0	3.4	.6	-----	-----	33.4	12.1
SW	.8	4.0	7.3	4.5	1.6	.5	-----	-----	18.6	10.6
W	.7	3.3	3.7	1.2	.4	.1	-----	-----	9.5	8.2
NW	1.2	3.7	4.1	1.3	.4	-----	-----	-----	10.8	8.7
Calm	1.7	-----	-----	-----	-----	-----	-----	-----	1.7	-------
Total	6.1	22.5	40.7	21.8	7.6	1.3	+	-----	150.0	10.6

Direction	November									
N	0.6	4.2	7.5	4.3	2.0	0.9	0.2	-----	19.7	12.2
NE	.4	3.0	6.1	3.1	.9	.3	+	-----	13.8	11.2
E	.4	4.2	5.6	1.6	.4	-----	-----	-----	12.2	9.2
SE	.6	7.9	12.8	2.6	.4	+	-----	-----	24.3	9.0
S	.4	5.9	12.2	4.9	1.6	.1	-----	-----	25.2	10.8
SW	.6	5.0	7.8	3.9	1.8	.6	.1	0.1	19.8	11.5
W	.9	5.6	5.5	2.2	1.4	.8	.2	.1	16.7	10.9
NW	1.1	6.9	6.6	2.5	1.4	.8	.1	-----	19.3	10.1
Calm	2.3	-----	-----	-----	-----	-----	-----	-----	2.3	-------
Total	5.9	28.6	41.3	15.7	6.0	2.2	.4	.1	153.3	10.1

Direction	December									
N	0.5	4.3	5.1	3.5	2.0	0.9	0.2	+	16.6	12.5
NE	.3	1.7	4.5	2.7	.9	.5	.1	-----	10.7	12.5
E	.5	2.7	4.3	1.5	.1	-----	-----	-----	9.1	9.1
SE	.9	5.3	9.1	3.1	.3	+	-----	-----	18.7	9.4
S	.8	5.7	13.6	7.6	2.0	.3	-----	-----	29.9	11.2
SW	.8	6.2	11.8	6.5	2.5	1.1	.4	0.1	29.5	12.0
W	.8	5.2	7.6	3.5	1.8	1.0	.5	.1	20.5	12.0
NW	1.1	6.2	7.3	2.8	1.8	.2	+	-----	19.4	10.1
Calm	1.7	-----	-----	-----	-----	-----	-----	-----	1.7	-------
Total	5.7	25.0	40.2	19.1	7.0	2.3	.6	.2	156.1	10.8



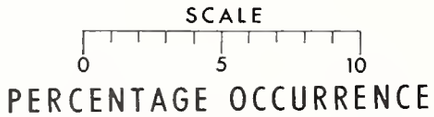


FIGURE 26.—Wind direction-speed polygons for Clovis, N. Mex.

TABLE 10.—*Percentage frequency of occurrence of wind classified according to direction and speed, Clovis, N. Mex., November 1951 to October 1956*

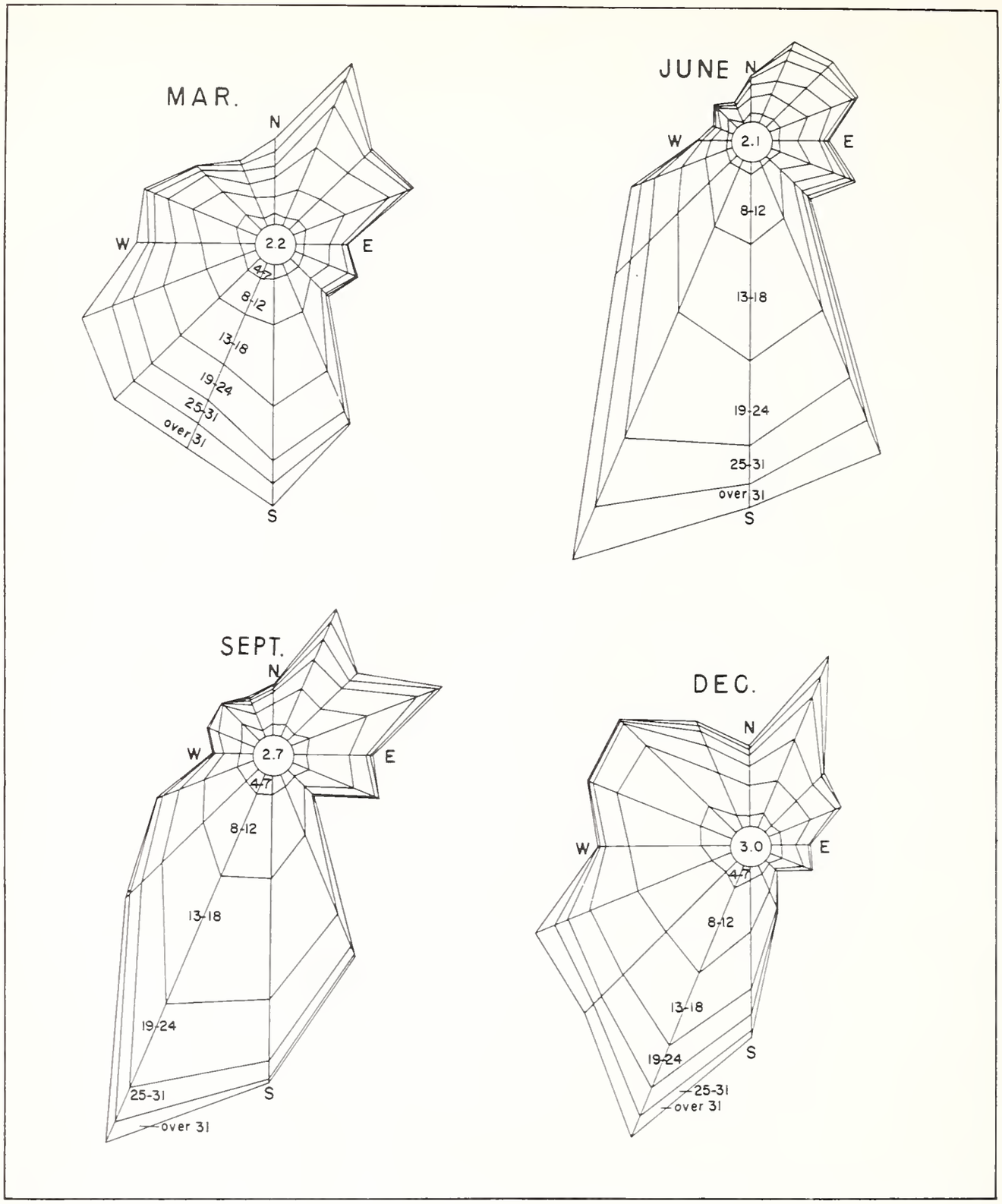
[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.5	1.7	3.4	2.1	1.8	0.5	0.1	+	10.3	1.32	0.3	1.1	3.2	4.6	4.0	2.5	0.5	0.1	16.4	17.6	0.1	0.6	2.4	3.3	2.0	1.6	0.3	0.2	10.8	17.7
NE	.4	1.9	4.5	2.6	1.3	.3	-----	-----	11.0	12.0	.1	.8	3.1	2.8	2.9	1.1	.1	.1	10.9	16.4	.1	1.0	2.0	3.3	1.9	1.3	.2	.2	9.9	17.1
E	.2	1.1	4.2	2.1	.2	-----	-----	-----	7.8	10.8	.1	.7	2.6	1.4	.6	.3	+	+	5.7	13.0	-----	.8	1.8	2.2	.7	.5	+	-----	6.1	14.4
SE	.1	1.7	4.4	1.6	.6	.2	-----	-----	8.6	11.1	.1	1.0	2.6	1.7	.9	.4	.1	-----	6.9	13.4	.2	1.3	3.9	3.9	1.7	.9	+	-----	12.0	14.2
S	.2	2.9	4.7	2.4	.9	.1	-----	-----	11.2	11.1	.2	1.9	6.0	4.3	1.5	.4	+	-----	14.3	12.6	.2	1.6	8.6	6.8	2.8	1.2	.1	-----	21.3	13.9
SW	.8	5.2	10.1	9.2	3.5	.5	.1	0.1	29.6	12.5	.7	4.2	12.2	9.9	4.9	1.3	.2	.1	33.5	13.4	.2	2.3	10.4	11.2	6.0	3.0	.5	-----	33.5	15.4
W	1.0	5.7	12.7	11.8	6.8	2.0	.3	.1	40.5	13.9	.6	3.9	10.4	11.5	6.0	2.3	.6	.1	35.4	14.8	.2	1.7	6.2	11.8	8.7	5.7	2.0	.6	36.8	18.8
NW	.8	3.8	7.8	4.6	2.5	.9	.2	+	20.6	12.6	.5	2.1	4.9	5.6	2.0	1.1	.5	.1	16.7	14.4	.2	1.0	3.0	4.4	3.1	2.5	1.1	.6	15.8	19.2
Calm	6.2	-----	-----	-----	-----	-----	-----	-----	6.2	-----	5.2	-----	-----	-----	-----	-----	-----	-----	5.2	-----	2.1	-----	-----	-----	-----	-----	-----	-----	2.1	-----
Total	9.3	16.2	35.5	23.8	11.6	3.1	.4	.1	145.8	11.7	7.3	11.1	30.6	28.4	15.3	6.5	1.3	.4	145.0	13.7	3.0	7.0	26.3	31.8	17.9	10.5	2.6	1.0	148.3	16.1

Direction	April										May										June									
N	0.1	0.6	2.1	2.4	1.3	1.5	0.5	0.1	8.6	17.6	0.1	1.4	3.4	4.1	2.7	1.0	0.1	+	12.8	15.1	+	0.7	1.6	1.7	0.8	0.4	0.1	-----	5.3	14.8
NE	.1	.9	2.6	3.4	3.1	1.3	.4	+	11.8	17.3	.1	1.4	3.4	4.1	2.4	1.8	.3	-----	13.5	16.1	+	1.1	2.0	2.1	1.1	.6	.1	-----	7.1	14.9
E	.2	1.4	3.7	3.5	2.3	.9	+	-----	12.0	14.7	.1	.9	3.2	2.1	1.5	1.0	.2	+	8.9	15.4	+	.8	3.1	3.2	1.7	.5	.3	+	9.6	15.2
SE	.4	1.6	5.0	4.3	2.9	1.6	.2	-----	15.8	15.0	.2	1.5	6.1	6.2	2.7	1.7	.5	0.1	19.0	15.4	0.1	1.4	5.1	8.0	4.8	2.6	.5	0.1	22.5	16.9
S	.1	1.1	5.5	6.7	3.3	1.3	.3	-----	18.3	15.3	.2	2.2	9.5	9.2	5.0	1.9	.6	.2	28.8	15.3	.1	2.1	10.3	17.6	9.6	3.3	.5	.1	43.5	16.2
SW	.3	2.3	8.6	10.4	4.4	2.0	.4	.1	28.5	15.1	.2	2.4	8.6	8.0	4.2	1.2	.2	+	24.9	14.3	.3	1.8	10.9	13.1	4.3	1.2	.1	.1	31.8	14.4
W	.1	1.2	7.7	9.4	5.2	3.8	1.1	.4	29.0	17.4	.1	1.3	5.0	6.8	3.1	1.7	.4	.1	18.6	16.0	.1	1.2	5.2	5.5	1.3	.6	-----	-----	13.8	13.5
NW	.1	.6	3.1	4.6	2.5	2.2	.9	.2	14.2	18.5	.1	1.2	3.1	3.2	1.8	1.2	.2	.1	11.0	15.8	+	.7	2.1	1.7	.6	.2	.1	.1	5.4	14.2
Calm	5.5	-----	-----	-----	-----	-----	-----	-----	5.5	-----	4.8	-----	-----	-----	-----	-----	-----	-----	4.8	-----	4.6	-----	-----	-----	-----	-----	-----	-----	4.6	-----
Total	6.5	6.9	26.4	29.9	17.3	10.1	2.6	.4	143.7	15.3	5.5	8.8	29.9	29.9	16.0	8.0	1.6	.3	142.3	14.5	5.0	6.6	28.0	36.1	16.7	6.3	1.2	.2	143.6	14.6

Direction	July										August										September									
N	0.1	1.2	2.5	1.5	0.8	0.3	0.2	-----	6.4	13.2	0.1	1.9	2.4	1.5	0.7	0.3	0.1	-----	6.9	11.8	+	1.1	1.8	1.6	0.9	0.2	+	-----	5.6	13.1
NE	+	.8	1.8	1.9	.9	.2	.1	-----	5.6	13.8	.1	2.1	3.4	1.5	.8	.2	+	-----	8.1	11.5	0.1	1.3	3.8	4.2	1.8	.2	0.1	-----	11.5	13.6
E	.1	1.4	3.5	2.6	1.3	.3	+	-----	9.2	13.1	.1	2.8	5.5	2.5	1.0	.1	+	-----	12.1	11.2	.1	2.2	6.7	4.3	.9	.3	.1	-----	14.5	12.1
SE	.3	3.0	9.8	10.6	5.6	1.7	.2	0.1	31.2	14.6	.3	4.3	11.2	8.4	2.6	.5	.1	-----	27.4	12.3	.2	4.0	11.1	7.5	2.4	.6	+	-----	25.8	12.2
S	.4	3.2	14.8	18.6	7.9	1.3	.1	-----	46.2	14.4	.3	5.8	19.2	12.0	2.9	.3	+	-----	40.6	12.0	.4	6.2	18.0	11.9	3.4	.7	+	-----	40.7	12.1
SW	.3	3.7	10.5	8.4	2.0	.1	-----	-----	25.1	12.2	.2	4.7	12.9	5.8	1.2	.2	-----	-----	25.0	11.0	.5	5.8	13.6	4.9	1.0	.2	-----	-----	25.9	10.4
W	.2	2.0	4.0	1.7	.4	.1	-----	-----	8.4	10.7	.1	2.2	4.2	2.4	.5	.1	-----	-----	9.4	10.9	.2	2.5	6.1	1.9	.4	+	-----	-----	11.0	10.2
NW	.2	.9	2.5	1.3	.7	.1	+	+	5.9	12.3	.1	1.4	2.3	.7	.4	.1	-----	-----	5.0	10.7	.1	1.3	1.8	.6	.3	.1	-----	-----	4.2	10.4
Calm	6.9	-----	-----	-----	-----	-----	-----	-----	6.9	-----	6.7	-----	-----	-----	-----	-----	-----	-----	6.7	-----	3.6	-----	-----	-----	-----	-----	-----	-----	3.6	-----
Total	7.9	11.4	33.5	31.0	13.0	2.8	.4	.1	144.9	12.6	7.6	17.8	42.0	24.2	6.9	1.3	.2	-----	141.2	10.9	4.9	16.8	43.5	25.2	7.9	1.5	.1	-----	142.8	11.4

Direction	October										November										December									
N	0.2	1.6	3.5	2.7	0.9	0.4	0.1	+	9.4	12.9	0.2	1.7	4.2	3.0	1.5	0.8	0.3	-----	11.7	13.8	0.6	1.5	3.8	4.6	1.6	0.7	0.2	+	13.1	13.9
NE	.3	2.5	5.5	4.7	2.1	.3	.1	-----	15.5	13.1	.2	2.4	5.3	4.3	2.0	.5	.2	-----	15.0	13.2	.3	1.5	3.8	4.2	2.0	1.0	.3	0.1	13.2	14.8
E	.1	1.9	4.7	2.3	.7	+	-----	-----	9.7	11.1	.1	2.3	3.6	2.5	.6	.2	-----	-----	9.2	11.4	.3	1.5	2.4	1.2	.2	.2	-----	-----	5.8	10.4
SE	.3	3.2	6.2	4.2	1.5	.8	.2	-----	16.5	12.6	.1	1.6	4.0	2.0	1.0	.3	-----	-----	9.0	12.0	.4	1.8	1.7	.6	+	+	-----	-----	4.5	8.4
S	.7	5.1	12.3	6.8	2.2	.8	.2	-----	28.0	11.9	.7	3.6	7.7	4.2	2.2	.7	.1	-----	19.2	12.2	.5	2.4	4.1	2.2	.6	.1	-----	-----	9.9	10.6
SW	1.1	6.4	14.3	6.5	1.5	.5	.1	-----	30.3	10.8	.8	6.0	13.0	8.7	2.3	.9	.2	+	31.9	12.0	.7	5.1	11.3	9.0	3.5	2.0	.2	.1	31.9	13.3
W	.3	3.8	11.3	6.0	1.7	.6	.2	-----	23.9	11.9	.5	4.4	10.5	8.9	3.1	1.3	.4	+	29.2	13.3	.9	4.9	14.9	14.6	6.6	3.4	.7	.4	46.5	14.7
NW	.2	1.3	4.3	1.9	.3	.2	.1	+	8.4	11.6	.5	1.8	5.0	2.8	1.4	.6	.2	-----	12.4	12.8	.9	2.0	7.1	6.0	1.8	.6	.2	.2	18.8	13.1
Calm	5.2	-----	-----	-----	-----	-----	-----	-----	5.2	-----	6.0	-----	-----	-----	-----	-----	-----	-----	6.0	-----	5.4	-----	-----	-----	-----	-----	-----	-----	5.4	-----
Total	7.6	17.6	41.8	22.8	7.4	2.3	.6	+	146.9	11.2	8.3	17.1	36.7	24.4	9.5	3.1	.9	.1	143.6	11.7	8.3	13.8	33.3	27.6	10.8	5.3	1.2	.5	149.1	12.7



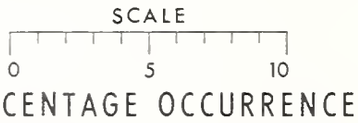
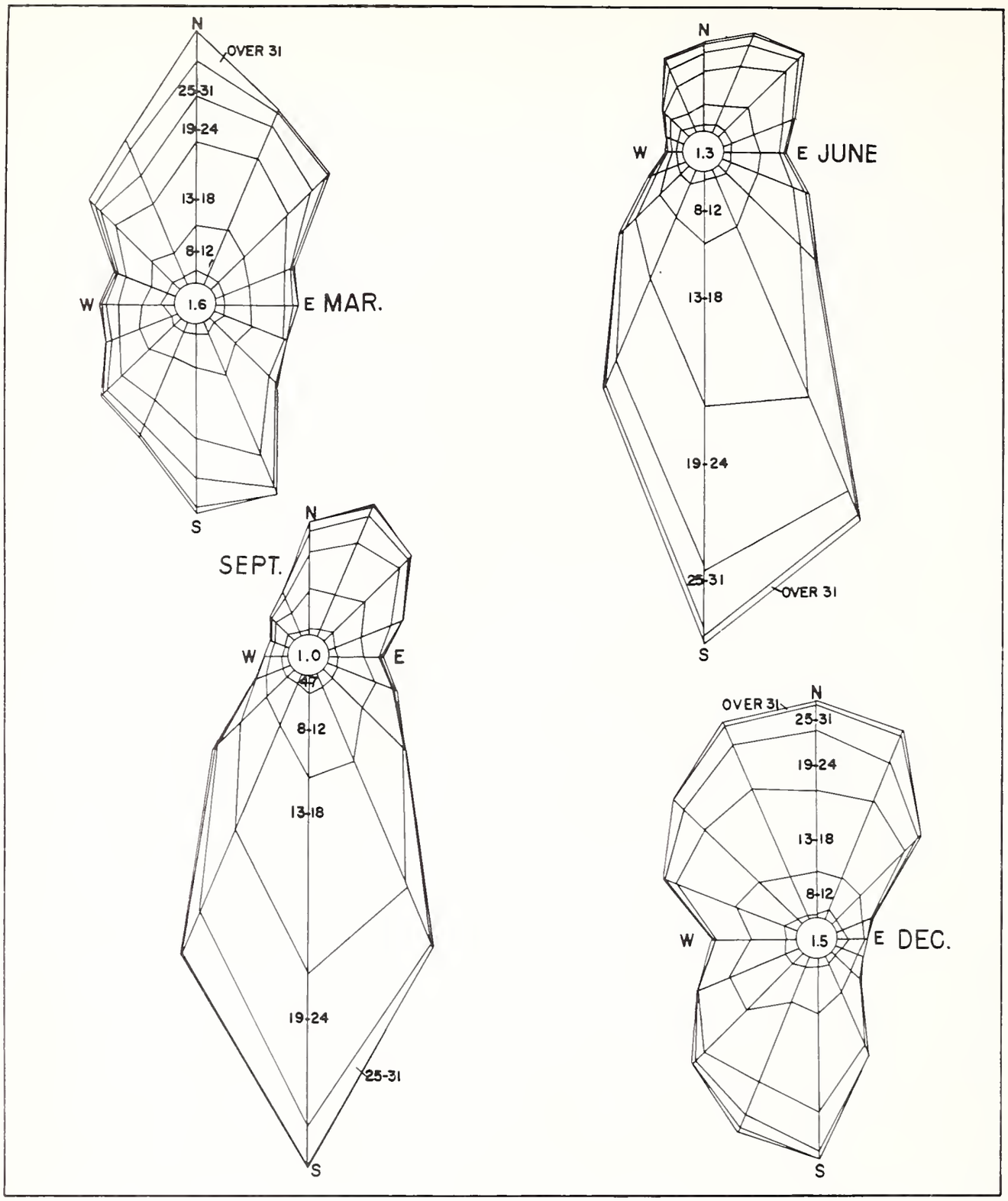


FIGURE 27.—Wind direction-speed polygons for Dalhart, Tex.

TABLE 11.—*Percentage frequency of occurrence of wind classified according to direction and speed, Dalhart, Tex., November 1949 to October 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.4	2.0	4.8	4.3	2.7	1.3	0.5	0.5	16.4	13.7	0.3	1.1	3.3	4.8	3.9	3.6	1.8	0.8	19.5	20.4	0.3	1.2	3.4	3.8	3.4	2.3	1.1	0.6	16.2	19.0
NE	.2	1.7	5.0	5.4	3.1	1.6	.3	.4	17.7	14.0	.3	1.3	3.7	4.3	3.1	2.7	.8	.3	16.3	17.7	.3	1.7	5.0	6.2	4.3	2.0	.8	.2	20.4	16.7
E	.2	1.0	2.5	1.9	.5	.1	+	-----	6.3	12.5	.2	1.1	2.6	1.5	.4	.2	.1	-----	6.1	11.8	.3	1.5	4.5	3.8	1.7	.2	.1	-----	12.0	13.1
SE	.3	1.4	2.9	1.8	.7	.1	-----	-----	7.3	11.7	.2	1.2	4.2	3.1	.9	.1	.1	-----	9.8	12.6	.2	1.6	4.0	4.8	2.7	.7	.2	+	14.3	14.8
S	.7	1.8	6.7	8.1	4.9	2.7	1.1	.6	26.0	17.1	.3	1.9	8.4	9.5	3.8	1.4	.8	.3	26.4	15.4	.2	2.1	6.0	9.7	6.6	2.8	1.5	1.1	29.8	18.2
SW	.2	1.8	10.5	10.7	6.3	3.8	2.5	1.6	37.4	18.3	.4	2.9	9.2	8.5	4.0	2.5	1.5	.7	29.6	16.1	.2	2.3	4.7	6.4	5.0	3.1	2.3	2.4	26.5	20.7
W	.3	2.7	11.0	5.3	2.4	1.1	.9	.5	24.1	14.3	.4	3.7	11.6	6.2	1.6	.8	.5	.1	25.0	12.5	.2	2.4	6.0	4.7	3.3	1.7	1.2	1.2	20.7	17.8
NW	.4	2.6	8.7	4.1	.8	.2	.4	-----	17.1	11.8	.3	2.5	9.4	4.6	1.4	1.0	.9	.6	20.6	14.5	.2	2.5	5.0	3.1	1.7	1.0	.3	.1	13.9	13.7
Calm	.4	-----	-----	-----	-----	-----	-----	-----	.4	-----	.9	-----	-----	-----	.9	-----	-----	-----	.9	-----	.8	-----	-----	-----	-----	-----	-----	-----	.8	-----
Total	2.3	10.4	33.5	27.2	13.4	6.7	3.6	2.1	153.3	15.0	2.6	10.4	34.3	27.3	12.1	7.8	3.8	1.7	154.2	15.2	2.2	10.3	24.7	27.2	18.2	8.9	4.9	3.8	154.6	17.2
	April										May										June									
N	0.2	1.5	3.1	3.8	4.0	2.9	1.6	0.7	17.7	19.8	0.5	1.4	3.8	5.1	3.9	1.5	0.6	0.2	16.9	16.6	0.3	1.0	2.7	1.5	1.6	0.7	0.3	0.1	8.1	15.6
NE	.3	1.4	4.3	5.9	5.1	2.8	1.5	.4	21.6	18.5	.4	2.1	5.2	6.8	5.2	2.5	1.0	.1	23.2	16.7	.2	1.5	3.5	3.1	3.1	1.3	.7	.2	13.6	17.0
E	.1	1.5	4.7	4.2	1.9	.4	.1	.1	12.1	14.7	.3	2.5	3.9	4.3	2.7	.8	.2	+	14.7	14.2	.2	1.2	3.8	3.4	1.9	.7	.2	.1	11.7	15.0
SE	.3	1.3	4.6	5.5	2.3	1.1	.3	.2	15.5	15.5	.3	2.0	4.5	6.3	3.4	.9	.6	.5	18.6	16.1	.2	.9	4.9	6.8	4.8	2.8	1.6	.5	22.6	18.8
S	.4	2.2	6.4	10.9	7.1	3.3	2.1	1.1	33.6	18.5	.4	2.4	5.9	10.7	7.7	3.1	2.2	1.7	34.2	19.0	.3	1.3	9.2	14.8	14.2	7.7	4.3	1.4	53.3	20.1
SW	.3	1.7	4.9	7.0	5.0	2.8	2.3	1.4	25.5	19.7	.4	2.1	4.5	6.0	5.6	2.9	1.9	1.1	24.5	19.1	.4	1.1	5.8	7.8	10.0	5.6	3.0	1.3	34.9	20.8
W	.2	1.9	6.3	3.5	1.8	.6	.3	.3	14.9	14.1	.3	1.9	4.6	2.8	1.8	.8	.6	.3	13.1	14.9	.4	.7	2.3	1.8	1.8	.7	.4	.2	8.4	16.6
NW	.3	1.9	5.2	2.3	1.1	.9	.3	.4	12.5	14.4	.4	1.6	4.1	1.7	1.0	.4	.2	.2	9.6	13.3	.3	.9	1.9	.6	.4	.1	.1	+	4.3	11.3
Calm	.7	-----	-----	-----	-----	-----	-----	-----	.7	-----	.4	-----	-----	-----	-----	-----	-----	-----	.4	-----	.5	-----	-----	-----	-----	-----	-----	-----	.5	-----
Total	2.3	9.2	25.7	27.3	18.3	9.3	5.1	2.8	155.1	17.0	2.5	10.7	23.8	28.2	19.6	8.2	4.5	2.6	155.2	16.7	2.1	5.9	22.1	25.9	23.2	12.0	6.4	2.3	157.4	18.3
	July										August										September									
N	0.3	1.5	2.4	2.0	0.8	0.4	0.2	+	7.6	13.2	0.2	1.2	2.1	1.9	1.0	0.4	0.2	-----	7.1	12.9	0.3	1.4	3.9	2.5	1.5	1.1	0.7	0.1	11.5	15.5
NE	.5	1.6	4.2	4.3	1.9	.5	.2	0.1	13.3	14.0	.2	2.7	4.6	3.5	1.8	.5	.2	-----	13.5	12.9	.3	1.9	6.6	5.5	2.6	1.7	.6	.1	19.3	15.1
E	.3	1.9	4.6	3.5	1.3	.3	.1	.1	12.1	12.8	.3	2.5	5.3	3.4	1.5	.3	.1	+	13.2	12.2	.5	2.4	7.3	4.5	1.4	.4	-----	-----	16.4	12.2
SE	.6	2.3	7.3	6.6	3.5	.8	.3	.2	21.6	14.2	.4	2.2	7.1	6.1	3.0	.8	.4	+	20.0	14.1	.3	1.8	5.6	5.7	2.0	.5	.1	-----	15.9	13.4
S	.6	3.6	14.8	18.3	11.5	3.8	1.0	.4	54.0	16.0	.5	3.5	15.6	17.7	8.7	3.7	1.1	0.1	50.8	15.5	.3	2.5	10.8	16.6	9.2	3.1	1.2	.1	43.8	16.2
SW	.3	2.2	8.3	10.4	6.9	3.1	.9	.3	32.3	16.6	.5	2.8	8.7	9.8	6.2	3.3	.7	.1	32.1	15.8	.3	2.6	8.8	10.7	6.6	2.9	1.2	.1	33.3	16.3
W	.1	1.1	2.9	1.7	.7	.3	.1	+	6.9	12.9	.5	2.8	3.4	1.5	1.3	.5	+	.1	10.0	12.1	.2	2.0	3.6	2.2	.9	.3	+	-----	9.3	11.9
NW	.3	1.5	1.9	1.1	.2	.2	-----	-----	5.2	10.5	.5	2.7	2.4	.8	.4	.2	-----	.1	7.0	9.7	.3	2.0	3.4	1.1	.3	.1	.1	-----	7.3	10.4
Calm	1.5	-----	-----	-----	-----	-----	-----	-----	1.5	-----	.9	-----	-----	-----	-----	-----	-----	-----	.9	-----	.9	-----	-----	-----	-----	-----	-----	-----	.9	-----
Total	3.6	10.7	30.3	30.7	16.9	5.7	1.6	.6	154.5	14.6	3.1	13.9	31.8	28.6	14.7	6.2	1.6	.2	154.6	13.9	2.7	11.0	32.2	30.6	15.1	6.2	2.2	.3	157.7	14.5
	October										November										December									
N	0.1	2.4	5.0	4.5	3.1	0.7	0.2	0.1	16.2	14.4	0.3	1.8	5.8	5.0	3.3	1.6	0.8	0.2	18.7	16.0	0.4	1.9	5.4	4.5	3.5	1.6	1.1	0.5	18.9	16.8
NE	.2	2.3	5.8	5.4	3.7	1.6	.2	-----	19.3	15.0	.3	1.8	5.7	5.6	3.8	1.5	.4	.1	19.3	15.5	.3	1.5	5.0	4.6	3.1	1.2	.7	.4	16.9	16.4
E	.4	2.9	5.3	3.0	1.3	.6	.1	-----	13.7	12.2	.4	2.1	4.4	2.4	.9	.4	.1	-----	10.7	12.0	.2	1.4	3.3	2.3	.4	+	-----	-----	7.8	11.3
SE	.3	2.8	5.6	4.7	1.4	.6	.1	+	15.8	12.8	.4	2.4	3.4	1.3	.3	.3	.3	.2	8.4	11.7	.4	1.1	2.4	1.4	.2	-----	-----	-----	5.4	10.5
S	.3	3.0	10.9	11.8	5.9	2.3	.7	.2	35.1	15.2	.2	2.5	8.9	8.1	3.4	1.1	.7	.3	25.1	14.8	.6	2.1	7.8	7.5	3.5	2.3	1.1	.2	25.1	15.9
SW	.3	3.4	9.5	7.9	4.0	1.8	.7	.2	27.8	14.7	.4	3.6	10.4	7.8	4.2	1.6	1.0	.2	29.2	14.7	.4	2.8	12.3	9.1	4.9	2.8	1.7	1.1	35.1	16.4
W	.2	2.8	6.1	2.2	.6	.3	.2	.1	12.7	11.3	.4	3.7	10.6	3.5	1.2	.7	.4	.1	20.6	11.9	.7	3.9	11.5	4.7	1.7	.8	.6	.5	24.5	13.0
NW	.3	3.3	6.3	1.5	.4	.1	+	.1	12.0	10.0	.6	4.6	12.4	2.8	.8	.7	.3	+	22.2	11.0	.6	4.0	10.6	4.1	1.2	.4	.3	.1	21.3	11.4
Calm	1.8	-----	-----	-----	-----	-----	-----	-----	1.8	-----	.8	-----	-----	-----	-----	-----	-----	-----	.8	-----	.6	-----	-----	-----	-----	-----	-----	-----	.6	-----
Total	3.3	15.5	36.0	26.0	12.6	4.9	1.4	.4	154.4	13.3	2.8	15.2	40.4	23.1	11.0	4.4	2.3	.7	155.0	13.3	3.0	12.3	38.5	24.6	11.4	5.5	3.1	1.7	155.6	14.3



SCALE

0 5 10

PERCENTAGE OCCURRENCE

FIGURE 28.—Wind direction-speed polygons for Dodge City, Kans.

TABLE 12.—*Percentage frequency of occurrence of wind classified according to direction and speed, Dodge City, Kans., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	1.3	5.1	9.9	6.0	2.1	0.1	0.1	24.9	16.1	0.4	2.0	6.1	10.7	6.0	3.7	1.0	0.6	30.4	17.1	0.3	1.5	5.8	10.2	5.4	3.7	1.5	0.9	29.3	18.6
NE	.3	2.0	5.6	7.3	3.5	.7	+	----	19.5	14.0	.6	1.8	5.1	6.4	3.0	1.7	.4	.1	19.1	15.3	.2	1.4	5.4	8.4	3.7	1.9	.5	+	21.4	15.8
E	.6	2.5	3.6	2.2	.5	+	----	----	9.4	10.1	.3	1.3	3.3	3.3	.6	.1	----	----	8.8	11.8	.3	1.2	3.9	4.9	1.0	.2	.1	----	11.6	12.9
SE	.7	2.0	4.5	4.8	.9	.2	----	----	13.1	11.4	.7	1.7	5.2	8.6	2.3	.5	----	----	19.0	13.2	.3	1.4	4.9	7.9	2.4	.5	+	----	17.4	13.9
S	.5	1.6	5.9	10.6	5.1	1.4	.1	----	25.2	15.0	.3	1.3	4.2	10.2	4.8	1.8	.1	+	22.7	16.0	.3	1.6	5.0	9.8	4.8	2.3	.4	+	24.3	15.8
SW	.4	2.3	5.3	5.9	2.6	.7	----	----	17.2	13.2	.2	1.9	4.7	5.5	2.4	.7	.2	+	15.5	14.6	.2	1.3	4.5	5.0	2.7	1.1	.2	----	15.0	13.8
W	.4	2.8	5.7	4.4	.8	.1	----	----	14.2	11.3	.1	2.1	4.9	4.2	1.0	.3	.1	----	12.8	12.2	.2	1.3	3.2	3.4	1.5	.6	.1	.1	10.2	13.6
NW	.3	2.2	6.0	8.8	2.5	.8	.1	.1	20.7	13.4	.2	2.1	4.9	8.3	3.0	1.3	.7	.1	20.7	14.8	.4	1.3	3.4	6.2	3.0	1.8	.8	.2	17.0	17.5
Calm	.2	----	----	----	----	----	----	----	.2	----	.4	----	----	----	----	----	----	----	.4	----	.2	----	----	----	----	----	----	----	.2	----
Total	2.6	11.6	28.4	37.3	15.5	4.4	.2	.1	144.7	14.0	2.4	9.6	25.8	37.2	15.6	7.0	2.0	.7	149.4	15.2	1.6	7.4	24.2	37.7	16.8	8.7	2.6	1.1	146.4	16.0
	April										May										June									
N	0.3	1.0	4.1	7.9	5.6	3.9	0.7	0.3	23.7	18.0	0.3	1.6	3.8	5.5	3.8	1.5	0.3	0.1	16.8	15.6	0.3	1.0	2.8	5.2	2.9	1.3	0.3	+	13.6	15.6
NE	.4	1.2	4.9	8.5	3.2	2.4	.5	.1	21.1	15.8	.3	1.9	5.3	8.0	4.3	1.3	.2	.1	21.4	15.1	.1	1.1	3.7	6.1	2.4	.9	.1	----	14.5	14.5
E	.4	1.3	4.2	5.6	1.4	.6	.2	+	13.6	13.8	.2	1.5	4.8	5.2	1.5	.5	.1	----	13.8	13.3	.2	1.1	3.9	4.2	1.3	.3	+	----	10.9	13.6
SE	.3	1.0	5.4	9.8	3.3	1.5	.3	.1	21.6	15.6	.3	1.5	7.3	11.1	5.9	1.6	+	+	27.6	15.4	.2	1.4	5.5	14.1	6.5	1.4	.3	+	29.4	16.1
S	.1	1.0	6.1	12.0	6.9	3.8	.8	.1	30.9	17.1	.2	1.8	7.3	14.7	11.2	5.2	.5	.1	41.0	17.5	.3	1.6	7.5	19.8	16.9	5.6	.8	0.1	52.5	17.8
SW	.2	1.3	3.9	6.3	2.7	2.4	.4	.1	17.1	15.7	.3	1.3	3.8	5.3	3.7	2.3	.3	.1	17.0	16.3	.2	1.7	3.8	5.3	5.3	1.7	.1	.1	18.1	16.4
W	.2	1.2	2.2	2.9	.9	.9	.3	.1	8.5	14.2	.1	.8	1.4	1.7	1.0	.4	----	+	5.4	14.2	.2	1.0	1.1	.9	.4	.1	.1	----	3.8	13.2
NW	.2	.8	2.3	3.9	2.5	1.9	.5	.3	12.4	17.4	.1	1.4	2.0	2.7	1.3	.7	.1	----	8.3	14.2	.3	1.1	1.9	2.1	1.0	.5	.2	----	7.1	13.6
Calm	.1	----	----	----	----	----	----	----	.1	----	+	----	----	----	----	----	----	----	+	----	.1	----	----	----	----	----	----	----	.1	----
Total	1.3	6.0	22.3	37.4	18.0	12.0	2.5	.6	149.0	16.6	1.2	7.7	23.6	35.3	21.7	9.1	1.1	.3	151.3	16.0	1.3	6.6	20.5	38.1	24.2	8.0	1.2	.2	150.0	16.3
	July										August										September									
N	0.5	1.4	3.5	3.8	1.3	0.4	0.1	0.1	11.0	13.0	0.2	0.9	3.8	4.5	1.5	0.6	+	----	11.5	14.2	0.1	0.9	4.6	5.3	2.7	1.0	0.2	----	14.8	15.2
NE	.3	1.9	4.5	4.9	1.9	.4	.1	.1	14.0	13.3	.2	1.0	5.6	5.6	1.1	.3	+	----	13.8	13.0	.3	1.3	5.1	6.4	2.6	.7	.1	----	16.6	14.2
E	.3	1.4	5.3	3.9	.7	.1	----	+	11.7	11.6	.2	1.2	4.8	3.1	.5	.1	----	----	10.0	11.9	.2	1.2	4.4	3.2	.9	.1	+	----	9.9	12.4
SE	.4	2.2	8.5	10.4	2.3	.4	.1	----	24.3	13.0	.2	1.8	10.7	12.8	2.3	.3	----	----	28.1	13.1	.3	1.8	7.6	10.3	3.2	.3	.1	----	23.4	13.8
S	.5	2.5	12.1	24.1	11.1	2.6	.2	----	52.9	15.4	.3	2.8	17.2	23.7	8.7	1.1	----	----	53.9	14.2	.3	2.1	9.8	21.3	14.4	4.3	.2	+	52.5	16.6
SW	.4	1.7	6.4	11.4	6.9	1.5	.1	----	28.3	15.4	.3	2.1	7.7	9.1	4.5	.9	----	----	24.6	14.1	.1	1.4	4.3	7.6	5.8	2.5	.1	+	21.8	16.5
W	.2	1.0	1.7	.9	.1	.1	----	----	4.0	9.9	.2	1.0	1.7	.9	.4	.1	----	----	4.3	10.9	+	1.0	1.9	1.1	.2	----	----	----	4.1	10.4
NW	.5	1.1	1.7	1.0	.3	.1	----	+	4.7	9.9	.2	1.0	1.5	1.0	.5	.1	+	----	4.2	11.6	.1	.9	2.3	1.4	.4	+	.1	----	5.2	12.4
Calm	.1	----	----	----	----	----	----	----	.1	----	.2	----	----	----	----	----	----	----	.2	----	.1	----	----	----	----	----	----	----	.1	----
Total	2.2	8.8	29.2	40.2	15.5	3.7	.3	.1	151.0	14.1	1.4	7.8	35.0	40.5	13.0	2.2	.1	----	150.6	13.6	1.0	7.4	26.9	38.0	20.4	5.9	.5	+	148.4	15.2
	October										November										December									
N	0.3	0.9	5.9	9.0	4.8	2.8	0.3	+	24.1	16.1	0.1	1.4	5.8	11.6	6.7	3.8	0.9	0.1	30.5	17.1	0.3	1.0	5.6	12.5	7.2	3.7	0.6	0.1	30.9	16.8
NE	.2	.8	5.2	6.4	1.9	1.2	.1	----	15.7	14.5	.3	1.1	3.5	5.9	2.1	1.9	.5	.1	15.3	16.0	.3	1.1	4.1	7.4	3.0	1.6	.3	----	17.8	14.8
E	.1	.8	3.9	2.7	.1	.1	----	----	7.7	11.2	.1	.8	1.6	1.2	.2	----	----	----	4.0	10.1	.2	1.0	2.5	.8	.1	----	----	----	4.5	9.6
SE	.1	1.5	4.9	9.0	5.1	1.1	.1	----	21.7	14.4	.2	.6	2.3	3.6	.8	.2	----	----	7.8	12.8	.3	.9	3.4	3.7	.6	.1	----	----	8.8	11.8
S	.4	1.7	8.2	17.7	11.0	3.0	.3	----	42.3	15.9	.2	1.3	6.2	12.2	5.8	1.9	.1	----	27.7	15.9	.3	1.4	5.5	11.6	4.1	1.1	.1	.1	24.0	14.8
SW	.4	2.0	6.5	7.3	3.7	1.3	+	----	21.2	14.2	.1	2.4	8.3	9.5	3.5	1.6	.2	----	25.5	14.5	.2	1.9	7.7	8.5	2.4	.9	.1	.1	21.7	13.4
W	.2	1.6	3.3	1.6	.2	.1	----	----	7.0	10.2	.2	2.0	6.3	6.6	1.0	.3	.1	----	16.5	12.2	.2	1.9	6.7	6.3	.9	.1	----	----	16.0	11.5
NW	.3	1.3	3.6	3.8	1.2	.7	.1	----	11.1	13.3	.1	1.4	6.5	10.3	3.5	1.3	.3	.1	23.4	14.3	.2	1.3	6.9	11.2	4.4	1.8	.1	.1	25.9	14.8
Calm	.2	----	----	----	----	----	----	----	.2	----	.1	----	----	----	----	----	----	----	.1	----	.1	----	----	----	----	----	----	----	.1	----
Total	1.5	7.2	28.2	37.7	18.2	6.6	.6	+	151.0	15.0	1.1	7.4	27.4	39.5	16.2	6.9	1.3	.1	150.8	15.1	1.5	6.8	28.6	41.1	15.1	6.0	.8	.1	149.7	14.7

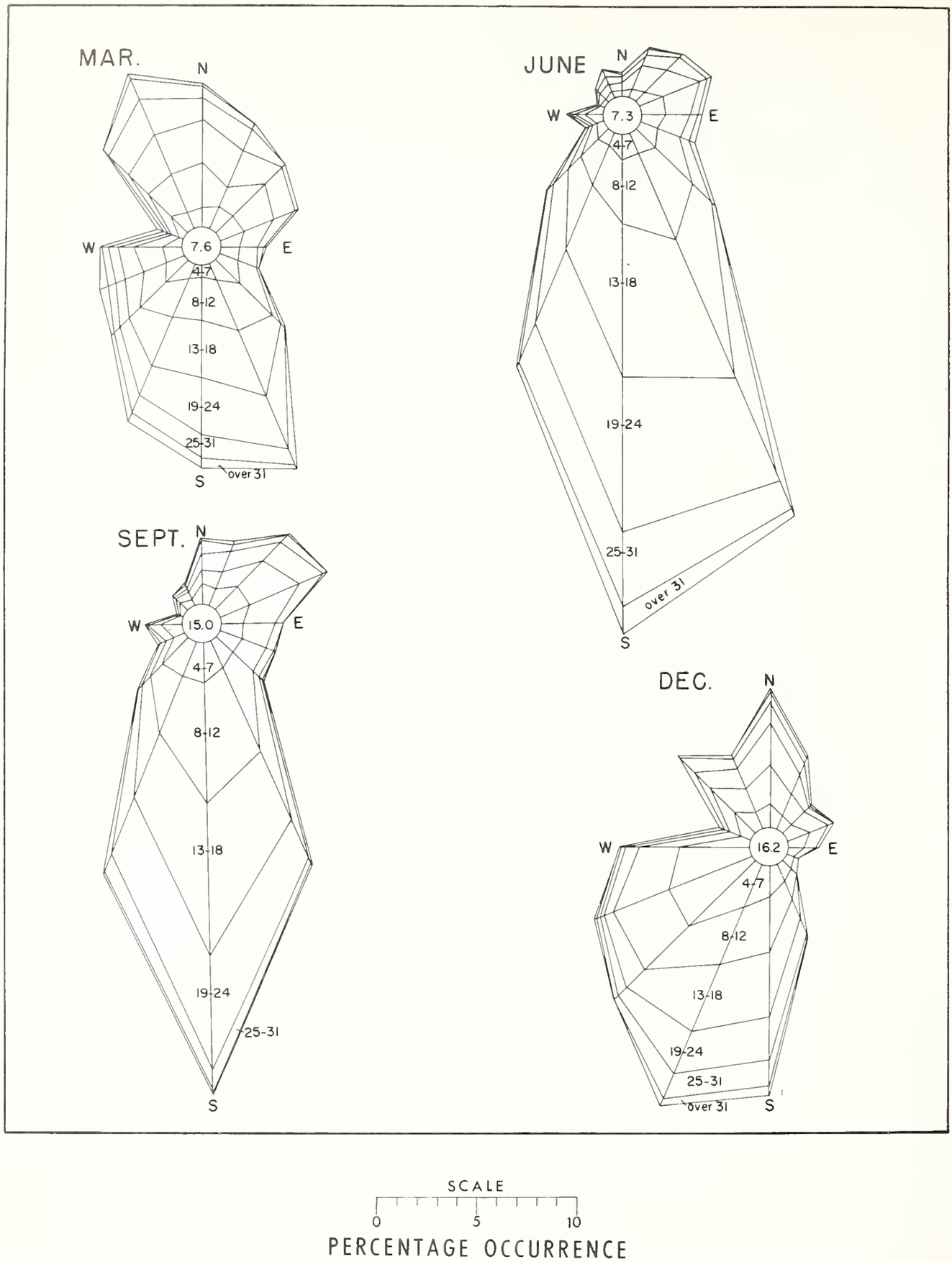


FIGURE 29.—Wind direction-speed polygons for Gage, Okla.

TABLE 13.—*Percentage frequency of occurrence of wind classified according to direction and speed, Gage, Okla., November 1949 to October 1954*

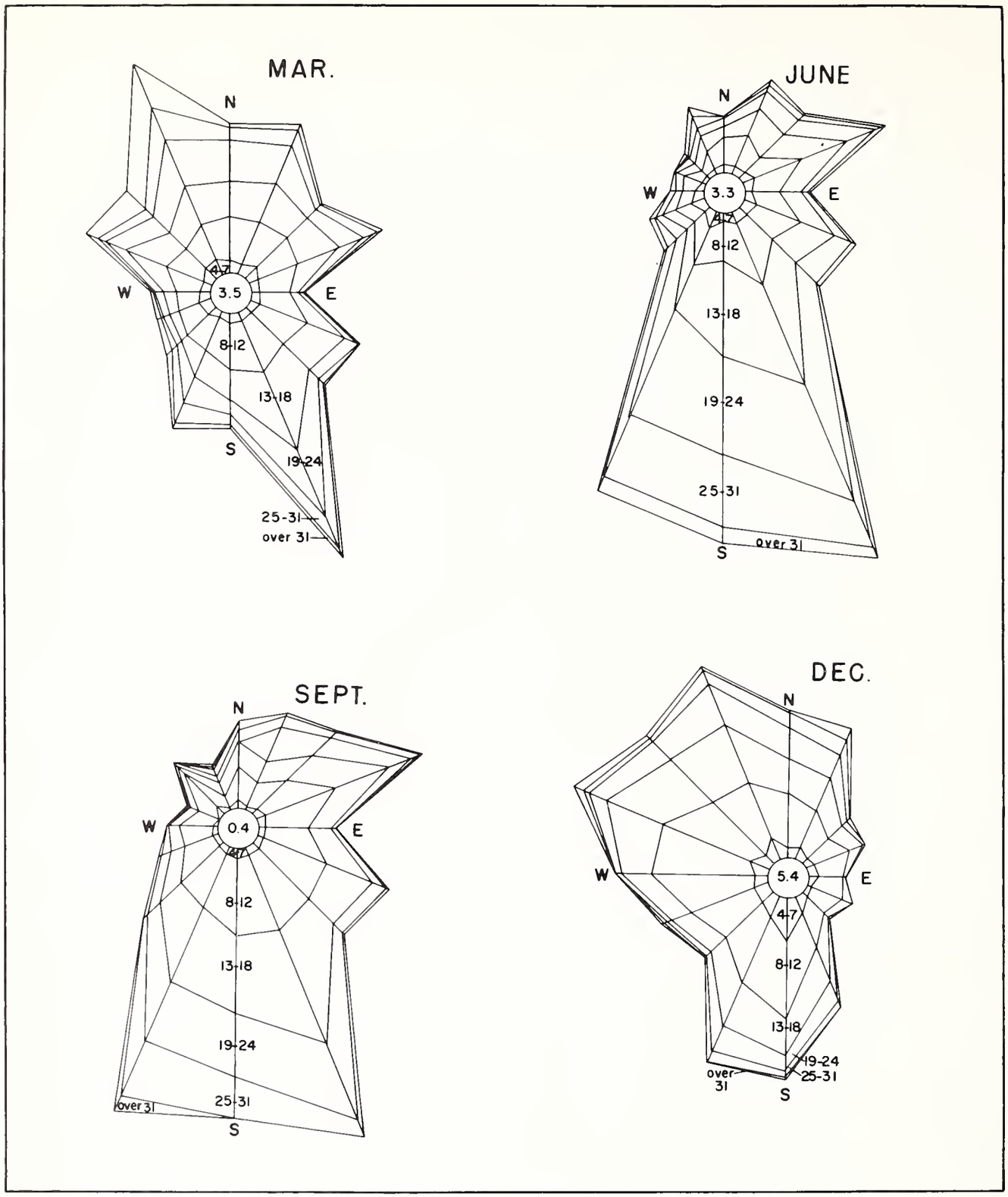
[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	1.2	2.7	6.2	6.7	2.9	0.5	0.1	----	20.3	12.9	0.9	2.7	6.1	6.8	3.9	1.4	0.1	0.1	21.9	14.3	0.7	3.2	5.4	6.4	4.3	2.0	0.2	0.1	22.2	14.9
NE	1.7	3.8	6.1	5.6	1.6	.1	----	----	18.8	11.0	1.1	2.5	3.8	3.0	1.5	.4	+	----	12.3	11.7	1.1	3.7	5.2	4.3	1.6	.3	----	----	16.3	11.4
E	1.5	2.2	1.4	.2	----	----	----	----	5.2	6.1	1.0	2.2	1.4	.4	+	+	----	----	5.1	6.7	1.0	3.1	3.8	1.5	.3	+	----	----	9.8	8.8
SE	1.4	2.0	2.1	1.5	.6	+	----	----	7.6	9.4	.8	2.6	3.4	2.6	1.6	1.0	.1	+	12.1	13.1	.9	3.6	6.2	4.4	3.2	.9	.1	.1	19.3	13.0
S	1.6	3.8	5.6	8.0	7.5	2.7	.4	0.1	29.8	15.5	1.7	3.8	7.9	9.5	5.9	3.3	.7	+	32.8	15.1	.8	2.4	7.1	9.2	7.3	3.1	.9	.2	31.0	16.6
SW	3.9	6.6	6.6	5.8	5.5	2.1	.4	.2	31.0	12.7	3.6	7.7	6.8	3.8	2.2	.8	.2	----	25.0	9.9	1.6	3.4	5.1	4.6	2.7	1.8	.8	.4	20.5	14.5
W	2.8	4.5	5.0	1.7	.4	.3	.1	+	14.9	8.5	2.2	5.1	4.5	1.2	1.0	.2	----	+	14.3	8.5	.9	2.3	3.0	2.0	1.3	1.0	.3	.3	11.2	13.7
NW	1.0	2.0	4.2	3.2	1.3	.3	----	----	12.0	11.9	1.3	3.6	5.1	3.7	2.7	.9	.4	.1	17.8	12.9	.7	2.4	4.0	3.8	3.7	1.8	.2	.2	16.7	15.2
Calm	4.0	----	----	----	----	----	----	----	4.0	----	3.1	----	----	----	----	----	----	----	3.1	----	2.0	----	----	----	----	----	----	----	2.0	----
Total	15.1	19.4	26.0	22.0	12.7	3.8	.8	.2	143.6	11.4	12.3	21.4	26.5	21.0	12.5	5.3	1.0	.2	144.4	11.8	7.6	16.8	27.3	23.3	15.7	6.9	1.8	.7	149.0	13.5

Direction	April										May										June									
N	0.9	2.1	5.2	5.7	5.1	2.1	0.4	0.1	21.4	15.6	1.2	2.4	4.6	5.6	2.4	0.4	0.1	+	16.8	12.9	0.7	1.2	2.1	1.3	0.8	0.2	0.1	----	6.4	11.6
NE	1.0	3.4	5.5	4.5	2.0	1.3	.3	+	18.0	13.0	1.7	4.1	6.6	4.8	1.6	.3	+	----	19.1	10.9	1.2	2.5	4.8	1.9	.7	.2	.1	----	11.5	10.1
E	1.2	3.8	5.4	2.6	.8	.4	.1	----	14.3	10.2	1.7	5.2	5.4	2.5	1.0	.1	----	----	15.9	9.2	1.3	3.5	4.4	1.3	.7	.1	+	----	11.3	9.1
SE	1.3	3.1	6.9	6.1	4.5	1.6	.4	.1	23.9	14.2	1.3	4.5	5.6	5.4	4.3	1.8	.4	0.1	23.4	14.0	1.2	3.4	8.6	9.4	6.2	1.6	.3	0.2	30.9	14.6
S	.8	2.5	5.6	9.9	9.4	5.2	1.6	.3	35.2	18.0	1.4	4.3	7.3	10.9	8.8	4.1	1.4	.3	38.6	16.5	.9	3.1	10.3	18.9	17.5	7.5	1.8	.3	60.3	17.9
SW	1.1	2.6	2.9	3.5	3.8	1.8	.4	+	16.1	15.1	1.7	2.5	3.5	3.4	2.1	1.4	.5	.2	15.4	14.1	.6	1.9	3.6	4.6	5.3	2.6	.3	----	19.0	16.7
W	.7	2.2	1.9	1.5	.7	.2	----	----	7.2	10.2	1.1	2.1	2.0	.5	.3	.3	.2	.1	6.6	9.9	.7	1.5	.9	.4	.2	.1	----	----	3.8	8.5
NW	.4	1.9	3.4	4.3	2.8	.9	.2	----	13.8	14.7	.9	1.5	2.3	2.2	1.3	.5	.2	.1	8.9	13.2	.6	.9	.9	.8	.4	+	+	----	3.6	10.5
Calm	1.5	----	----	----	----	----	----	----	1.5	----	3.0	----	----	----	----	----	----	----	3.0	----	2.1	----	----	----	----	----	----	----	2.1	----
Total	6.6	14.6	24.3	24.9	18.6	8.6	2.2	.3	151.4	14.4	10.9	18.3	24.8	23.2	14.5	6.1	1.9	.6	147.7	12.9	7.3	12.3	23.4	25.4	20.9	8.4	1.9	.3	148.9	14.7

Direction	July										August										September									
N	0.6	1.3	1.9	0.7	0.4	0.1	----	+	5.0	10.1	1.3	2.0	2.2	1.3	0.4	+	----	----	7.3	9.1	1.2	2.1	2.0	2.1	1.3	0.4	+	----	9.1	11.4
NE	1.4	4.9	5.1	1.8	.4	.1	----	+	13.6	8.6	2.2	5.1	5.1	1.7	.5	0.1	----	----	14.6	8.2	2.8	4.1	5.4	3.6	1.1	.3	+	----	17.3	9.8
E	2.1	6.3	5.3	1.8	.2	+	----	+	15.8	7.9	2.5	5.9	4.5	.9	.2	+	----	----	14.1	6.9	2.6	4.0	5.6	2.0	.3	+	----	----	14.6	8.2
SE	1.8	5.7	12.3	8.3	2.8	.5	+	----	31.3	11.5	1.8	5.8	11.0	7.5	1.9	.2	----	+	28.1	10.8	1.6	4.1	7.2	4.5	2.4	.3	0.1	+	20.3	11.6
S	1.9	6.2	16.8	14.9	11.6	3.1	0.4	+	54.9	14.3	1.8	6.3	16.7	16.9	7.3	1.0	0.1	+	50.1	13.1	2.0	5.6	13.8	15.0	11.1	2.4	.4	0.1	50.3	14.4
SW	1.2	3.7	6.0	4.7	4.2	.9	.1	----	20.8	13.3	1.3	3.3	5.7	5.8	4.0	.9	.1	----	21.1	13.3	2.1	4.4	4.3	4.4	3.6	1.1	.2	----	20.1	12.5
W	.7	1.4	.9	.4	.1	----	----	----	3.5	7.6	1.1	1.9	1.5	.6	.7	.2	+	----	6.0	9.4	1.5	1.8	1.1	.5	.2	----	----	----	5.2	7.0
NW	.5	.5	.4	.2	.2	.1	----	----	1.8	8.8	.9	1.3	1.0	.3	.1	----	+	----	3.6	7.4	.6	.9	.8	.4	.2	.1	----	----	2.9	8.5
Calm	2.9	----	----	----	----	----	----	----	2.9	----	3.7	----	----	----	----	----	----	----	3.7	----	4.7	----	----	----	----	----	----	----	4.7	----
Total	10.2	19.9	31.4	21.4	13.3	3.4	.4	.1	149.6	11.6	12.5	21.5	31.6	23.1	9.7	1.5	.1	+	148.6	10.6	15.0	18.8	26.8	22.0	14.0	3.0	.5	.1	144.5	11.3

Direction	October										November										December									
N	1.9	3.8	5.5	3.0	1.9	0.3	----	----	16.4	10.7	1.4	3.1	5.9	3.7	1.9	1.3	0.3	+	17.6	12.7	1.5	2.8	4.5	4.2	2.2	1.1	0.2	----	16.4	12.8
NE	1.7	4.2	6.0	3.5	1.2	.2	----	----	16.6	10.2	1.9	3.4	4.6	2.4	1.0	.5	.1	----	13.9	10.2	1.8	2.5	3.1	1.7	.7	.3	.1	----	10.2	10.0
E	1.9	3.0	2.1	.9	.1	+	----	----	8.1	7.1	1.1	2.0	1.3	.3	.1	+	----	----	4.8	6.6	1.7	2.4	1.8	.4	----	----	----	----	6.2	6.5
SE	1.0	3.8	4.2	3.4	1.9	.2	----	----	14.5	11.2	1.2	2.0	2.3	2.0	1.5	.3	+	----	9.2	11.5	1.0	2.0	1.6	1.2	.8	.1	----	----	6.7	10.1
S	2.0	6.0	9.6	11.3	9.7	2.7	0.4	0.1	41.9	14.6	2.3	5.3	7.6	9.3	6.0	1.4	.3	----	32.2	13.4	2.1	5.0	6.9	8.2	5.2	2.7	.8	0.2	31.1	14.6
SW	3.9	6.5	4.9	3.8	3.4	1.4	.2	+	24.1	11.2	4.9	8.1	7.3	5.3	3.1	.6	.1	----	29.3	10.0	4.5	11.6	9.2	5.5	3.1	1.9	.5	.1	36.3	10.7
W	2.3	3.3	1.5	.6	.2	.1	.1	----	8.1	6.7	3.4	6.1	4.7	1.6	.9	.3	----	----	17.0	8.1	3.3	8.5	5.6	1.5	.7	.3	.1	.1	20.1	7.9
NW	1.2	1.9	1.2	1.3	.6	.1	----	----	6.4	9.9	1.3	3.1	4.7	2.3	1.3	1.0	.2	0.1	13.8	11.9	2.0	2.9	3.6	2.5	1.8	.4	----	----	13.2	10.9
Calm	5.1	----	----	----	----	----	----	----	5.1	----	4.7	----	----	----	----	----	----	----	4.7	----	3.5	----	----	----	----	----	----	----	3.5	----
Total	16.9	22.5	24.7	19.1	13.2	3.3	.4	.1	141.2	10.8	17.8	23.3	26.6	17.8	10.3	3.5	.6	.1	142.5	10.3	16.2	26.0	24.9	17.1	9.8	4.7	1.1	.3	143.7	10.7



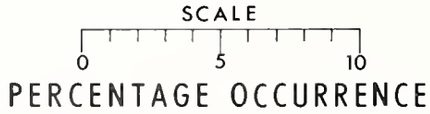


FIGURE 30.—Wind direction-speed polygons for Garden City, Kans.

TABLE 14.—*Percentage frequency of occurrence of wind classified according to direction and speed, Garden City, Kans., November 1949 to October 1954*

[The symbol, +, indicates occurrenct of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.9	1.7	7.6	6.0	5.3	2.7	0.6	0.2	24.9	15.9	0.9	3.1	6.2	6.0	6.4	3.5	0.9	0.7	27.7	17.2	0.5	2.0	6.1	5.6	6.3	3.1	1.6	1.2	26.3	18.7
NE	.4	1.3	6.0	4.1	3.1	1.2	.2	-----	16.3	14.6	.3	2.3	4.5	3.3	2.6	1.2	.3	-----	14.3	14.4	.1	1.7	6.2	5.3	3.8	1.8	.6	.1	19.7	15.9
E	.4	1.1	3.6	1.9	.4	-----	-----	-----	7.5	11.0	.2	1.4	3.4	2.3	.8	.1	-----	-----	8.1	12.1	.2	1.3	5.8	4.4	2.1	.8	.3	.1	15.0	14.5
SE	.6	1.7	5.0	3.8	1.6	.4	+	-----	13.2	12.4	.6	1.4	4.9	4.4	2.6	.9	.1	-----	15.0	14.3	.4	1.3	7.1	7.9	4.7	2.0	.5	.1	24.0	15.9
S	1.4	3.6	8.1	6.3	3.8	1.5	.2	.1	25.0	13.2	1.0	3.1	7.4	6.6	4.1	1.9	.6	-----	24.9	14.5	.7	1.3	6.5	7.0	5.5	3.3	.6	.1	25.0	16.8
SW	1.7	2.6	8.9	4.8	2.3	1.0	.1	.1	21.4	12.3	.9	1.6	6.1	4.5	1.6	.8	.4	-----	15.8	13.4	1.0	1.4	4.1	2.3	2.1	1.6	.5	.2	13.1	15.4
W	1.8	2.6	10.7	5.9	1.4	.4	.1	+	23.1	11.6	1.1	1.8	8.6	5.8	1.2	.2	.2	-----	19.0	12.1	1.1	1.4	4.0	3.2	1.8	.6	.5	.4	13.0	14.6
NW	1.2	2.1	8.1	7.0	3.4	1.3	.6	.1	23.8	14.2	1.3	2.9	7.5	8.0	5.5	3.1	.8	1.2	30.3	16.7	.9	2.0	5.0	5.2	4.5	2.6	2.0	2.1	24.3	19.7
Calm	.1	-----	-----	-----	-----	-----	-----	-----	.1	-------	.5	-----	-----	-----	-----	-----	-----	-----	.5	-------	.2	-----	-----	-----	-----	-----	-----	-----	.2	-------
Total	5.8	11.3	38.1	25.2	13.2	5.1	1.0	.3	155.3	13.2	4.6	11.8	32.2	26.2	14.9	7.2	2.1	1.2	155.6	14.5	3.5	8.4	29.1	24.9	18.5	9.2	3.9	2.6	160.6	16.4
	April										May										June									
N	0.7	1.8	5.3	5.8	6.3	4.7	1.9	0.4	26.8	18.8	0.6	1.6	4.9	5.1	5.5	1.9	0.6	0.1	20.2	16.5	0.2	1.1	3.8	2.7	1.7	1.0	0.6	0.2	11.4	16.1
NE	.4	1.3	4.8	4.5	3.8	2.4	.8	.1	18.1	16.9	.4	1.5	5.7	5.1	4.5	1.4	.2	+	18.9	15.4	.3	1.4	5.0	5.3	3.4	.9	.5	.1	16.9	15.7
E	.3	1.1	5.6	5.3	3.1	.9	.1	-----	16.4	14.7	.3	1.6	8.0	6.4	3.1	1.0	.1	+	20.5	14.2	.4	1.4	5.9	5.0	2.8	.6	.3	.1	16.5	14.5
SE	.4	2.2	7.8	9.5	6.4	2.2	.4	.1	28.9	15.9	.6	2.5	9.2	9.5	6.9	3.3	1.5	.2	33.7	16.5	.5	1.7	7.2	8.5	8.4	2.9	.5	.2	29.9	16.9
S	.7	1.7	6.4	7.1	8.1	2.8	1.5	.1	28.4	17.5	.8	2.1	8.2	7.9	7.2	3.5	1.5	.4	31.6	17.1	.9	1.9	6.9	12.1	16.3	9.1	2.0	.3	49.6	19.3
SW	.7	.9	3.3	2.4	2.6	.9	.8	+	11.7	16.2	.6	1.6	4.6	2.4	1.7	1.1	.9	.3	13.3	15.5	1.3	1.9	3.3	3.5	6.6	3.9	.9	.3	21.5	18.1
W	.7	1.1	4.1	2.6	.7	.4	.1	-----	9.6	12.3	.8	1.5	3.5	1.6	.8	.6	.2	.1	9.0	12.6	.9	1.3	2.3	1.4	.7	.1	.1	.1	6.9	11.3
NW	1.0	1.9	5.7	5.1	4.9	3.4	1.2	.5	23.7	17.4	.9	1.7	4.2	3.6	2.5	1.9	.9	.2	15.9	16.0	.3	.8	2.2	1.6	.9	.6	.5	.3	7.3	16.6
Calm	.1	-----	-----	-----	-----	-----	-----	-----	.1	-------	.3	-----	-----	-----	-----	-----	-----	-----	.3	-------	.1	-----	-----	-----	-----	-----	-----	-----	.1	-------
Total	3.3	7.8	26.9	25.6	21.2	10.5	3.9	.9	163.7	16.4	3.7	9.0	30.0	25.5	18.9	8.8	3.6	.6	163.4	15.6	3.3	7.3	22.7	25.5	25.0	12.0	3.4	.8	160.1	17.0
	July										August										September									
N	0.3	1.6	3.0	1.6	1.1	0.6	0.1	0.1	8.3	13.2	+	0.6	3.4	2.2	1.5	0.5	0.2	-----	8.4	14.8	0.1	0.6	3.5	2.9	2.8	1.4	0.2	0.1	11.5	16.6
NE	.3	1.7	5.5	3.7	2.7	.9	.3	.1	15.2	14.3	.1	.9	6.3	4.0	2.6	.8	.3	+	15.0	14.8	-----	.9	6.9	5.5	4.1	1.5	.3	-----	19.1	15.6
E	.3	1.5	7.3	6.3	2.5	.6	.1	+	18.7	13.8	.1	1.4	8.3	5.1	1.9	.4	.1	-----	17.2	13.2	.1	1.0	8.8	6.3	1.9	.6	.1	-----	18.7	13.5
SE	.7	2.0	15.5	15.0	7.7	1.9	.1	-----	43.0	14.7	.1	1.2	12.7	12.0	6.7	1.4	.2	-----	34.2	15.1	.1	1.0	10.6	10.0	5.3	1.1	-----	-----	28.1	14.6
S	.3	2.6	14.5	15.4	12.3	4.2	.5	+	49.9	16.1	+	1.5	14.9	14.6	12.4	2.6	.3	-----	46.3	15.9	.1	1.3	10.4	13.4	10.3	5.8	.7	.1	42.0	17.3
SW	.3	1.3	4.8	4.1	4.2	2.8	.5	.1	18.1	17.3	.2	1.0	7.4	5.9	6.6	2.0	.3	+	23.5	16.3	.1	.9	6.7	5.9	4.4	3.3	.7	.1	22.1	17.1
W	.1	.8	1.2	.8	.2	.1	+	+	3.2	11.5	.1	.9	3.3	1.7	1.3	.3	.1	+	7.8	14.0	.1	.5	4.2	1.6	.7	.1	-----	-----	7.1	12.1
NW	.2	.9	1.5	.7	.3	.1	-----	.1	3.8	11.4	.1	1.0	2.5	1.8	1.0	.3	.1	0.1	6.8	13.8	+	.7	3.9	1.5	.6	.5	.1	.1	7.3	13.5
Calm	+	-----	-----	-----	-----	-----	-----	-----	+	-------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-------	+	-----	-----	-----	-----	-----	-----	-----	+	-------
Total	1.9	8.5	33.9	29.4	18.7	6.5	1.0	.2	160.2	14.8	.4	6.2	38.4	28.6	20.4	5.1	1.0	.1	159.2	14.9	.4	4.9	37.0	29.4	18.3	8.8	1.1	.1	155.9	15.4
	October										November										December									
N	0.1	1.0	7.1	5.9	4.4	2.4	0.6	+	21.5	16.4	1.4	2.8	5.8	5.8	4.3	2.9	0.6	0.2	23.9	15.6	0.8	2.2	7.4	6.4	4.8	2.2	0.8	0.1	24.6	15.6
NE	.1	1.5	7.2	6.6	4.2	1.2	.3	-----	21.2	15.1	.4	1.4	4.8	4.2	3.5	1.3	.3	-----	16.0	15.3	.3	1.2	5.1	3.3	1.7	1.0	.5	.1	13.2	14.9
E	.1	1.2	5.8	3.9	1.5	.2	-----	-----	12.6	12.9	.4	1.1	3.9	2.1	1.0	.3	-----	-----	8.8	12.2	.3	1.2	4.5	1.2	.2	-----	-----	-----	7.4	10.1
SE	.1	1.0	8.4	9.2	3.4	.8	+	+	23.0	14.4	.2	1.0	5.3	3.4	1.8	.4	+	-----	12.1	13.4	.6	1.4	4.5	2.5	1.1	.3	-----	-----	10.5	11.9
S	+	1.0	10.8	11.0	5.8	2.7	.3	0.1	31.7	15.8	1.7	2.7	10.4	6.2	2.8	.6	.1	-----	24.3	12.2	1.6	4.1	8.8	5.9	3.1	1.1	.1	+	24.7	12.4
SW	.1	1.0	6.9	4.1	2.6	1.9	.3	+	16.9	15.2	2.1	3.1	8.7	5.1	2.1	.5	.1	-----	21.6	11.4	1.4	2.5	9.1	4.3	1.8	.8	.1	-----	20.0	12.0
W	.1	1.1	5.9	1.6	.3	.2	+	-----	9.1	11.0	2.7	3.8	8.2	4.3	1.3	.4	+	-----	20.6	10.3	1.2	2.3	12.7	5.2	1.5	.5	.3	.2	23.9	12.1
NW	.1	.8	6.6	3.1	1.7	1.4	.3	+	14.1	14.7	3.3	4.5	7.0	6.3	3.0	1.9	.3	.3	26.5	12.8	1.3	2.6	11.0	8.7	4.2	1.1	.6	.2	29.7	14.0
Calm	.1	-----	-----	-----	-----	-----	-----	-----	.1	-------	.8	-----	-----	-----	-----	-----	-----	-----	.8	-------	.4	-----	-----	-----	-----	-----	-----	-----	.4	-------
Total	.6	6.4	41.3	29.2	15.3	6.1	1.1	.1	150.2	14.5	8.9	13.4	35.9	23.5	12.4	4.9	.8	.3	154.6	12.5	5.4	11.5	41.9	23.8	11.5	4.2	1.4	.3	154.4	12.9

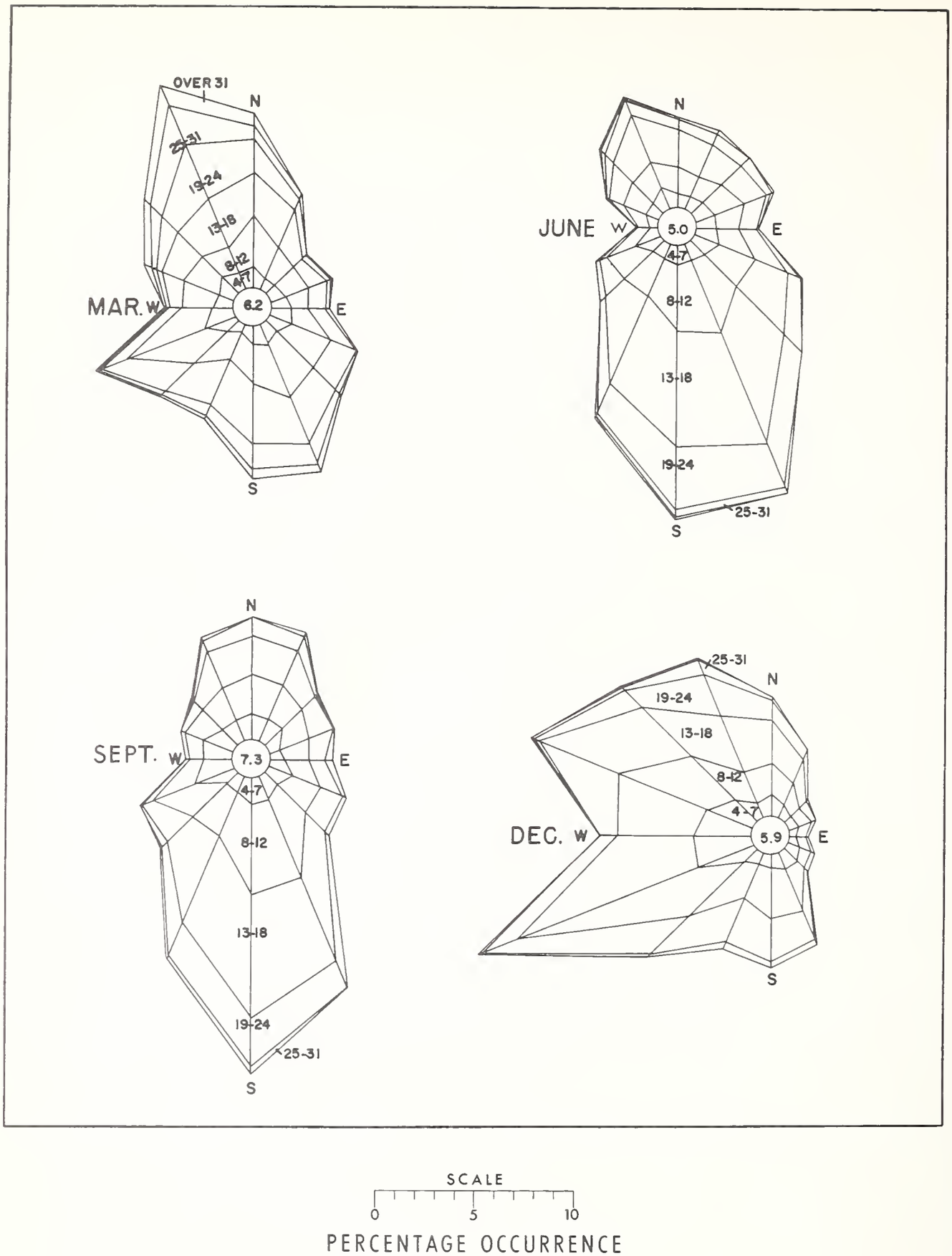


FIGURE 31.—Wind direction-speed polygons for Goodland, Kans.

TABLE 15.—*Percentage frequency of occurrence of wind classified according to direction and speed, Goodland, Kans., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.5	2.6	6.4	7.0	1.6	0.6	0.1	-----	18.8	12.6
NE	.2	1.5	3.3	2.8	.2	-----	-----	-----	8.0	10.1
E	.2	1.8	3.1	.9	-----	-----	-----	-----	6.0	8.6
SE	.6	3.6	7.4	3.5	.9	+	-----	-----	16.0	9.8
S	.3	3.7	10.3	6.7	1.6	-----	-----	-----	22.7	11.2
SW	.8	5.9	14.8	4.2	.3	-----	-----	-----	26.0	9.5
W	.8	7.6	15.6	3.5	.2	.1	+	-----	27.8	9.1
NW	.7	5.2	9.6	7.2	2.0	.6	.2	-----	25.5	12.0
Calm	2.8	-----	-----	-----	-----	-----	-----	-----	2.8	--------
Total	5.8	20.8	44.9	23.2	4.2	.9	.2	-----	153.6	10.3

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.6	3.1	4.4	7.1	4.1	2.5	0.7	0.1	22.5	15.6
NE	.4	2.1	2.7	2.0	.5	+	-----	-----	7.6	10.2
E	.2	2.2	1.8	.7	.1	-----	-----	-----	5.0	8.1
SE	.4	3.2	7.2	4.8	1.2	.1	-----	-----	16.8	11.1
S	.3	3.7	9.6	8.2	1.5	.2	-----	-----	23.4	11.6
SW	.6	6.1	10.4	4.1	.3	+	-----	-----	21.5	9.5
W	.7	7.0	13.7	3.1	.2	.1	-----	-----	24.7	9.0
NW	1.0	4.0	10.2	7.8	3.5	2.6	.7	.1	29.8	13.7
Calm	2.4	-----	-----	-----	-----	-----	-----	-----	2.4	--------
Total	5.4	20.4	38.5	24.6	7.4	3.0	.8	.1	153.7	11.4

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.5	2.7	5.7	7.0	5.4	3.2	1.1	0.5	26.2	16.8
NE	.4	2.0	4.2	3.7	1.1	.3	+	-----	11.8	12.4
E	.7	3.1	4.1	3.3	.5	.1	-----	-----	11.6	10.5
SE	.8	3.2	7.5	5.6	1.6	.5	+	-----	19.1	11.9
S	.5	2.4	6.4	8.1	3.1	1.0	.1	-----	21.6	13.7
SW	.6	2.8	7.8	6.0	1.2	.3	-----	-----	18.7	11.5
W	.8	3.4	7.4	3.3	.8	.4	.4	+	16.4	10.7
NW	.6	2.9	4.7	5.7	4.5	3.3	1.4	.6	23.7	16.9
Calm	2.9	-----	-----	-----	-----	-----	-----	-----	2.9	--------
Total	6.2	14.9	31.2	27.7	11.8	5.6	1.9	.7	152.0	13.2

Direction	April									
N	0.6	2.4	5.3	7.4	3.7	2.2	0.4	0.2	22.1	15.0
NE	.7	2.6	3.9	4.5	1.5	.3	.1	-----	13.4	11.2
E	.7	3.1	5.1	4.0	1.1	.3	.1	-----	14.3	11.1
SE	.8	3.3	8.2	8.3	3.4	1.0	.1	-----	25.0	13.1
S	.3	2.8	7.1	8.6	4.8	2.0	.3	+	25.9	14.6
SW	.4	3.1	6.3	4.1	1.9	.4	.1	-----	16.3	11.7
W	.6	2.9	5.1	2.2	.8	.2	.1	.1	12.0	10.6
NW	.4	2.4	5.1	5.6	3.6	2.7	.8	.3	20.9	16.1
Calm	2.3	-----	-----	-----	-----	-----	-----	-----	2.3	--------
Total	5.1	14.9	29.9	29.6	13.4	5.7	1.2	.3	152.2	13.4

Direction	May									
N	0.5	2.4	4.8	5.6	2.3	0.6	0.1	-----	16.2	13.3
NE	.5	2.6	5.2	6.4	2.0	.1	.1	-----	16.9	12.8
E	.5	2.9	4.7	4.8	1.3	.3	.1	-----	14.5	12.2
SE	.6	3.1	8.2	10.2	5.6	1.7	.2	0.1	29.7	14.5
S	.6	2.6	7.6	10.8	6.9	1.4	.3	+	30.1	15.1
SW	.5	3.1	6.3	4.0	1.4	.3	.1	-----	15.8	11.6
W	.6	3.4	5.1	2.6	.5	.1	-----	-----	12.3	9.7
NW	.4	2.8	4.3	4.2	1.5	.7	.3	.1	14.5	12.6
Calm	2.6	-----	-----	-----	-----	-----	-----	-----	2.6	--------
Total	5.6	15.4	30.2	31.2	13.4	3.4	.7	.2	152.6	12.9

Direction	June									
N	0.3	2.6	3.9	6.3	2.0	0.4	0.1	-----	15.6	12.8
NE	.4	2.5	3.9	4.4	1.5	.3	-----	-----	13.0	12.0
E	.4	3.3	4.7	3.9	1.2	.2	-----	-----	13.7	11.0
SE	.5	3.3	8.3	11.2	4.4	.6	-----	-----	28.3	13.4
S	.4	2.7	9.5	16.9	7.1	1.0	.1	0.1	37.8	14.6
SW	.5	3.0	5.7	6.6	2.2	.2	+	.1	18.3	12.5
W	.5	2.6	3.4	1.4	.3	.1	+	-----	8.3	9.4
NW	.5	2.5	4.1	4.9	1.6	.5	.2	-----	14.2	12.2
Calm	2.5	-----	-----	-----	-----	-----	-----	-----	2.5	--------
Total	5.0	14.5	28.6	36.1	13.5	2.0	.3	.1	151.7	12.8

Direction	July									
N	0.5	3.2	4.7	3.6	0.9	0.2	-----	-----	13.1	10.9
NE	.8	3.2	4.9	3.8	.6	.1	-----	-----	13.4	10.2
E	1.0	4.2	5.8	3.2	.8	.1	-----	-----	15.0	9.8
SE	.9	7.2	13.1	8.5	2.0	.2	+	-----	32.1	10.8
S	.5	5.3	14.5	13.2	3.1	.4	+	-----	37.0	12.0
SW	.6	3.8	6.6	4.8	.8	+	-----	-----	16.7	10.7
W	.9	4.1	3.0	.5	.1	+	-----	-----	8.7	7.4
NW	.8	3.5	3.1	1.3	.4	.2	-----	-----	9.4	9.1
Calm	4.0	-----	-----	-----	-----	-----	-----	-----	4.0	--------
Total	8.2	23.0	36.2	26.4	5.6	.7	+	-----	149.4	10.4

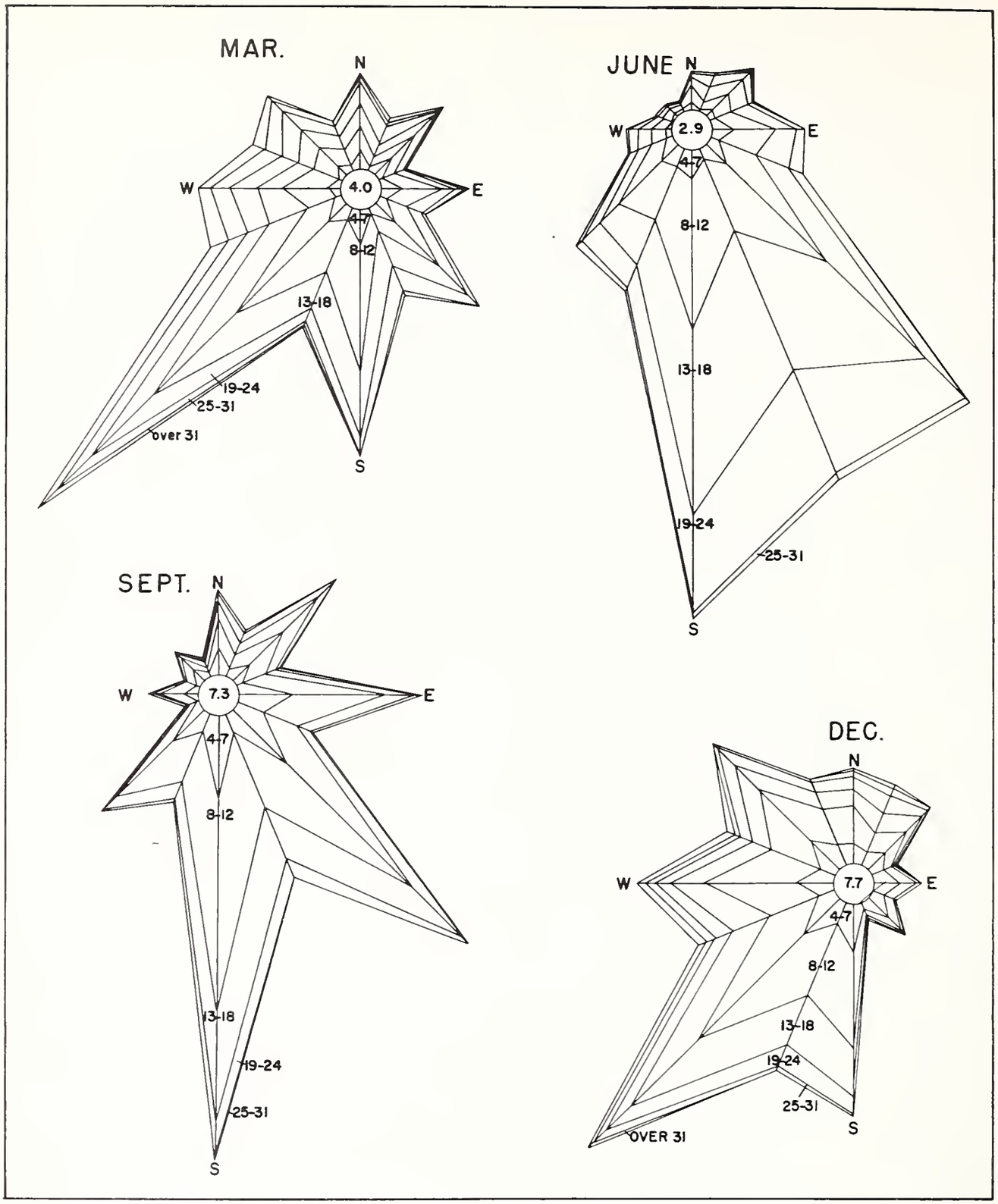
Direction	August									
N	0.8	3.0	3.8	3.7	1.0	0.2	-----	-----	12.6	11.1
NE	.7	3.4	4.0	3.0	.3	.1	-----	+	11.5	10.1
E	.7	3.3	4.1	3.2	.4	.1	-----	+	11.8	9.9
SE	.7	5.5	10.9	11.4	1.7	.2	-----	-----	30.5	11.3
S	.6	5.5	15.6	15.8	3.1	.2	-----	-----	40.9	12.0
SW	.8	5.7	8.0	5.3	.7	+	-----	-----	20.6	10.0
W	1.0	4.8	3.4	1.0	.1	+	-----	-----	10.3	7.6
NW	.8	2.7	2.7	2.2	.5	.1	-----	-----	9.0	9.6
Calm	4.5	-----	-----	-----	-----	-----	-----	-----	4.5	--------
Total	8.8	22.1	34.8	28.6	5.2	.6	-----	+	151.7	10.4

Direction	September									
N	0.8	3.6	5.7	5.9	2.2	0.4	-----	-----	18.6	12.6
NE	.4	2.9	4.9	4.0	1.1	.3	-----	-----	13.6	11.3
E	.4	2.4	4.3	3.2	.7	+	-----	-----	11.1	10.3
SE	.6	3.5	7.8	7.2	1.9	+	-----	-----	21.1	11.7
S	.4	3.6	11.4	15.8	5.7	.6	-----	-----	37.5	13.7
SW	.9	3.9	7.1	7.1	2.2	.3	+	-----	21.5	11.9
W	.8	5.1	3.9	1.0	.1	.1	+	-----	11.0	8.1
NW	.9	3.8	4.1	2.9	.7	.3	-----	-----	12.6	10.6
Calm	3.7	-----	-----	-----	-----	-----	-----	-----	3.7	--------
Total	7.3	18.8	32.6	30.5	9.6	1.3	+	-----	150.7	11.5

Direction	October									
N	0.8	3.6	4.7	6.0	2.7	1.0	0.3	0.1	19.3	13.2
NE	.8	2.8	3.0	1.3	.5	-----	-----	+	8.3	9.2
E	.5	3.5	3.4	1.2	.1	-----	-----	-----	8.7	8.4
SE	.6	4.0	9.1	7.6	2.4	.6	.1	-----	24.4	12.1
S	.6	2.3	10.0	11.7	4.1	1.0	.1	-----	29.9	13.5
SW	.7	3.9	8.7	5.0	1.1	.2	+	-----	19.7	10.8
W	1.0	5.9	8.1	2.6	.2	.1	-----	-----	17.9	8.8
NW	1.0	5.1	6.0	6.3	2.9	1.3	.3	.1	23.0	12.6
Calm	3.1	-----	-----	-----	-----	-----	-----	-----	3.1	--------
Total	7.2	19.8	33.9	27.1	8.9	2.5	.5	.1	154.3	11.5

Direction	November									
N	0.8	2.2	4.1	8.0	6.1	1.8	0.3	-----	23.4	15.8
NE	.4	1.6	1.9	2.0	.8	.1	-----	-----	6.8	11.1
E	.4	1.4	2.1	1.0	.3	-----	-----	-----	5.2	9.7
SE	.5	2.4	4.3	3.4	.9	.1	-----	-----	11.6	11.0
S	.4	2.5	6.0	5.3	1.6	.3	-----	-----	16.0	12.4
SW	.5	4.3	13.9	5.6	.6	+	-----	-----	24.9	10.3
W	.6	7.2	17.8	6.1	.8	.3	.1	-----	32.8	9.9
NW	.9	5.2	10.3	10.8	5.7	1.7	.4	.2	35.1	13.6
Calm	2.3	-----	-----	-----	-----	-----	-----	-----	2.3	--------
Total	5.3	17.5	37.6	26.3	10.2	2.6	.5	.2	158.1	11.9

Direction	December									
N	0.3	2.6	4.5	6.5	4.0	1.0	0.1	-----	19.0	14.3
NE	.3	1.6	2.5	2.0	.7	-----	-----	-----	7.2	10.1
E	.3	1.4	1.8	.6	-----	-----	-----	-----	4.2	7.8
SE	.4	2.5	3.4	2.1	.3	-----	-----	-----	8.7	9.9
S	.4	2.3	6.8	6.1	1.0	-----	-----	-----	16.6	11.7
SW	.6	4.6	15.7	7.0	.7	-----	-----	-----	28.6	10.5
W	.8	8.4	18.4	7.1	.4	.1	-----	-----	35.2	9.8
NW	.9	4.9	9.6	10.9	3.9	1.1	.1	-----	31.4	13.1
Calm	3.2	-----	-----	-----	-----	-----	-----	-----	3.2	--------
Total	5.9	18.5	39.8	27.4	7.0	1.3	.1	-----	154.1	11.1



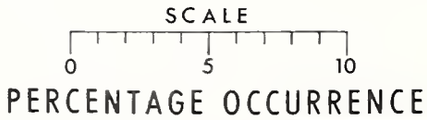


FIGURE 32.—Wind direction-speed polygons for Hobbs, N. Mex.

TABLE 16.—*Percentage frequency of occurrence of wind classified according to direction and speed, Hobbs, N. Mex., November 1949 to October 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	1.7	3.9	2.1	1.4	0.6	0.2	+	10.1	13.1
NE	.5	1.3	3.2	2.7	1.0	.5	----	----	9.4	12.6
E	.7	1.6	3.4	1.7	.5	----	----	----	7.7	10.2
SE	1.0	2.0	2.6	.8	.3	----	----	----	6.8	8.6
S	.6	3.3	9.7	4.4	1.3	.1	----	----	19.5	10.9
SW	.8	4.2	15.8	9.2	4.5	1.7	.4	0.2	36.8	13.2
W	.8	2.7	8.9	6.0	3.2	2.1	.5	.2	24.2	13.2
NW	.7	3.1	6.5	3.7	1.9	1.3	.2	.1	17.5	12.9
Calm	1.5	----	----	----	----	----	----	----	1.5	----
Total	5.7	15.4	41.8	21.9	10.1	4.2	.8	.3	133.5	11.9

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.7	1.6	3.2	3.1	2.3	1.6	0.3	0.1	13.0	15.2
NE	.9	1.3	1.8	1.8	2.1	1.0	.1	----	9.0	14.7
E	.8	1.8	2.2	.9	.4	.2	----	----	6.2	9.6
SE	.9	2.2	3.7	1.4	.9	.1	----	----	9.1	10.1
S	.6	3.4	9.0	3.9	2.3	.4	.1	----	19.6	11.8
SW	.9	3.7	13.5	6.9	5.1	1.6	.3	.2	32.3	13.4
W	.8	2.7	7.6	5.5	3.3	1.7	.3	.1	21.9	13.9
NW	.8	2.4	6.9	3.9	2.3	1.5	.3	.2	18.3	13.7
Calm	1.3	----	----	----	----	----	----	----	1.3	----
Total	6.2	15.2	37.5	20.4	13.7	5.6	.9	.4	130.7	12.7

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	1.3	2.3	2.5	2.5	0.9	0.2	----	10.1	15.5
NE	.4	1.5	2.6	2.6	1.4	.4	.2	----	9.0	13.6
E	.2	1.5	3.6	1.9	.6	.1	----	----	8.0	11.2
SE	.3	1.9	5.0	4.5	2.2	.2	----	----	14.1	13.0
S	.4	2.5	9.7	6.9	2.9	.3	.1	----	22.9	12.8
SW	.4	2.1	10.3	9.5	5.9	3.4	1.6	0.6	34.0	16.9
W	.5	1.1	4.9	4.0	3.3	2.8	1.2	.8	18.6	18.6
NW	.4	1.1	3.4	2.7	2.6	1.9	.5	.3	13.0	17.2
Calm	1.6	----	----	----	----	----	----	----	1.6	----
Total	4.0	10.8	32.5	25.5	16.0	7.2	2.9	1.2	131.3	14.8

Direction	April									
N	0.4	1.6	2.9	2.5	1.9	0.9	1.3	+	10.5	14.7
NE	.2	1.1	3.2	3.3	2.1	1.1	.4	+	11.4	15.4
E	.4	1.2	4.1	3.0	.6	.3	+	+	9.6	11.7
SE	.7	2.5	7.1	4.7	2.1	.2	+	----	17.3	12.1
S	.4	2.3	12.4	9.5	5.0	.7	.3	+	30.6	13.8
SW	.4	2.1	10.9	7.6	4.5	2.6	.8	0.1	29.1	15.2
W	.2	.9	5.2	3.5	2.7	1.8	.5	.3	15.1	16.5
NW	.3	1.3	3.1	1.6	1.8	.9	.1	.1	9.2	14.8
Calm	1.1	----	----	----	----	----	----	----	1.1	----
Total	3.8	10.5	36.1	26.5	15.2	5.9	1.7	.4	133.9	13.9

Direction	May									
N	0.3	1.8	4.0	3.3	2.3	0.8	+	+	12.5	13.9
NE	.2	1.6	4.7	3.7	2.2	.8	0.1	0.1	13.4	14.2
E	.3	2.0	4.0	2.5	1.0	.1	.1	----	10.0	11.7
SE	.5	2.7	7.6	5.1	2.7	1.1	.2	----	20.1	13.3
S	.7	2.5	10.5	9.2	5.0	.9	.1	+	29.0	13.8
SW	.4	2.2	7.9	6.6	3.6	1.9	.5	.1	23.1	14.8
W	.2	1.4	2.9	2.4	1.7	1.2	.3	.1	10.2	15.6
NW	.3	1.5	2.9	1.8	.9	.5	.1	----	7.9	12.7
Calm	1.9	----	----	----	----	----	----	----	1.9	----
Total	4.6	12.7	34.8	26.5	14.7	5.5	1.0	.2	128.1	13.4

Direction	June									
N	0.1	0.7	1.4	1.3	0.9	0.2	+	----	4.8	13.8
NE	.1	.9	2.3	2.6	1.4	.2	0.1	----	7.7	14.2
E	.1	1.8	4.7	3.6	1.4	.1	----	----	11.6	12.3
SE	.4	2.3	12.4	15.5	8.6	.7	----	----	39.8	14.6
S	.5	2.8	13.9	18.4	11.2	.9	----	+	4.77	14.8
SW	.4	2.3	6.5	4.3	2.7	.6	+	+	17.0	13.2
W	.2	.8	2.0	1.7	.9	.2	----	----	5.8	13.1
NW	.1	.6	.9	.6	.2	----	----	----	2.4	11.1
Calm	1.2	----	----	----	----	----	----	----	1.2	----
Total	2.9	9.1	33.0	34.0	18.8	2.1	.1	+	138.0	13.8

Direction	July									
N	0.5	1.7	1.2	0.9	0.5	0.2	+	0.1	5.2	10.8
NE	.6	2.3	2.7	2.3	1.0	.2	----	----	9.1	11.4
E	.6	3.5	5.9	4.2	1.4	.2	----	----	15.8	11.2
SE	1.7	6.6	15.8	15.5	5.1	.2	----	----	45.1	12.3
S	1.6	5.7	14.6	13.6	4.1	.2	----	----	39.7	12.2
SW	1.0	2.9	4.7	2.4	.3	.1	----	----	11.4	9.9
W	.2	1.0	.7	.6	.2	.1	----	----	2.8	10.4
NW	.5	1.3	.6	.4	.2	+	----	----	3.0	8.3
Calm	2.4	----	----	----	----	----	----	----	2.4	----
Total	7.9	19.4	34.8	28.2	8.7	.9	+	.1	134.5	11.1

Direction	August									
N	0.5	1.7	2.4	1.4	0.6	0.1	+	----	6.7	10.6
NE	.6	2.2	3.4	1.9	.6	----	+	----	8.8	10.3
E	.7	3.3	6.3	3.0	.9	.1	----	----	14.2	10.3
SE	1.2	6.6	16.0	11.9	2.7	.1	----	----	38.6	11.3
S	1.2	6.3	16.6	12.7	2.8	.1	----	----	39.6	11.6
SW	.5	3.5	5.4	2.7	.8	.1	----	----	13.0	10.3
W	.4	.8	1.3	.6	.1	----	----	----	3.3	9.1
NW	.5	.7	1.3	.6	.2	+	----	----	3.3	9.8
Calm	2.2	----	----	----	----	----	----	----	2.2	----
Total	6.9	20.0	41.2	25.6	6.1	.3	+	----	129.7	10.5

Direction	September									
N	0.7	2.1	2.4	1.7	1.1	0.4	----	+	8.4	11.6
NE	.4	1.8	4.2	3.5	2.0	.2	----	----	12.1	12.8
E	.6	3.9	7.5	2.5	.7	.1	----	----	15.3	9.9
SE	1.1	5.8	14.0	6.8	1.6	.1	----	----	29.4	10.6
S	.8	5.7	16.9	8.9	2.8	.1	----	----	35.2	11.4
SW	.8	3.1	6.8	1.9	.4	.1	----	----	13.1	9.5
W	.6	1.1	2.1	.6	.3	.1	----	----	4.7	9.6
NW	.7	1.3	1.4	.7	.3	.1	----	----	4.6	9.4
Calm	2.4	----	----	----	----	----	----	----	2.4	----
Total	7.3	20.4	44.0	20.7	6.7	.9	----	+	125.2	10.4

Direction	October									
N	0.8	2.7	3.7	3.0	1.5	0.2	----	----	11.9	11.5
NE	.6	2.3	3.6	3.6	1.9	.1	----	----	12.1	12.4
E	.7	2.9	3.6	1.8	.3	----	----	----	9.2	9.4
SE	.9	4.5	8.2	3.6	1.2	.2	----	----	18.6	10.3
S	1.0	6.9	16.0	7.2	2.2	.2	----	----	33.5	10.6
SW	1.0	4.7	12.2	4.0	.8	.3	0.1	----	23.1	10.2
W	.8	1.9	3.0	1.5	.3	+	----	----	7.6	9.5
NW	.9	2.7	2.5	1.0	.2	.1	----	----	7.5	8.4
Calm	3.1	----	----	----	----	----	----	----	3.1	----
Total	8.8	23.3	41.0	19.9	6.1	.9	.1	----	126.6	10.0

Direction	November									
N	0.9	2.4	4.6	3.2	1.4	0.8	0.1	----	13.4	12.3
NE	.5	1.8	4.4	3.4	1.7	.7	.1	----	12.6	13.2
E	.5	1.6	3.1	1.5	.2	.1	+	----	7.0	10.0
SE	.4	1.7	2.8	1.2	.3	.1	----	----	6.5	9.9
S	1.2	3.4	11.6	4.3	1.1	.1	----	----	21.6	10.5
SW	1.1	5.0	13.2	6.3	2.3	.5	.4	----	28.9	11.5
W	.9	3.5	7.6	4.1	1.9	1.3	.8	----	20.0	13.1
NW	1.3	4.6	7.1	2.7	1.7	1.0	.2	----	18.6	11.3
Calm	2.4	----	----	----	----	----	----	----	2.4	----
Total	7.9	19.6	41.7	19.3	7.5	3.1	1.0	----	131.0	11.0

Direction	December									
N	0.8	2.8	4.6	2.7	2.0	0.9	0.2	+	14.1	12.9
NE	.7	2.3	2.9	2.1	1.4	.7	.2	+	10.4	12.7
E	.7	2.3	1.7	.5	.1	.1	----	----	5.4	7.8
SE	.9	2.1	1.7	.5	.1	+	----	----	5.3	7.5
S	.9	3.7	8.6	5.0	2.0	.3	----	----	20.6	11.5
SW	1.3	4.3	13.2	9.1	3.6	1.7	.6	0.2	34.0	13.3
W	1.0	3.5	9.4	4.5	2.2	1.3	.9	.3	23.1	13.5
NW	1.4	4.0	7.7	3.6	2.4	.8	.3	.1	20.3	12.1
Calm	1.9	----	----	----	----	----	----	----	1.9	----
Total	7.9	19.0	37.1	20.3	9.7	4.1	1.4	.5	135.1	11.8

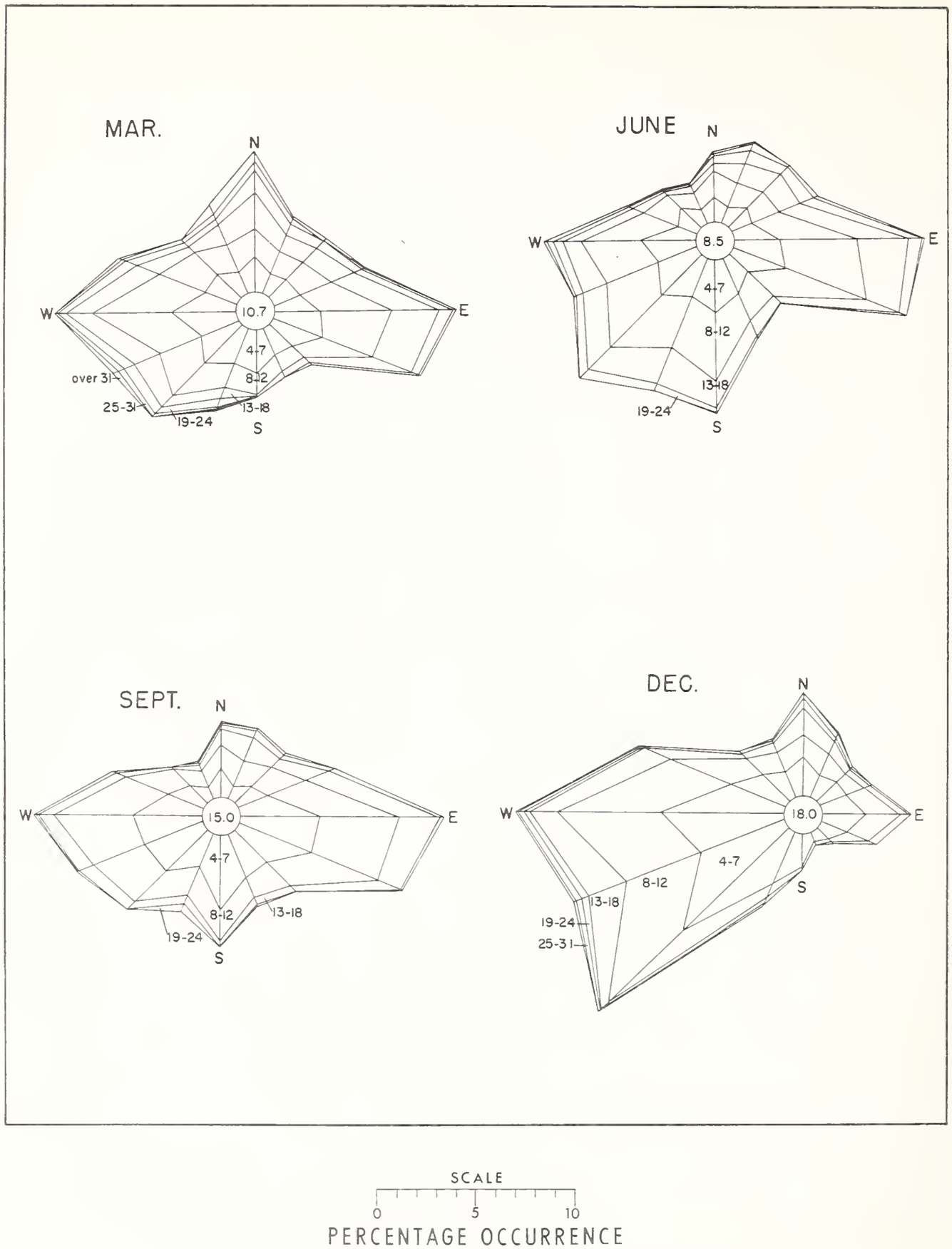


FIGURE 33.—Wind direction-speed polygons for La Junta, Colo.

TABLE 17.—*Percentage frequency of occurrence of wind classified according to direction and speed, La Junta, Colo., November 1949 to October 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	1.7	3.3	2.4	1.6	0.9	0.3	0.1	0.1	10.4	10.0	1.1	4.0	4.9	3.5	3.7	1.5	0.3	0.2	19.2	14.0	1.3	4.0	4.1	3.9	2.0	1.1	0.6	0.4	17.5	14.1
NE	1.9	4.1	3.3	1.9	.9	.1	-----	+	12.1	9.0	.9	3.3	3.6	2.3	1.3	.7	-----	-----	12.1	11.5	1.1	3.8	4.0	3.2	1.4	.4	.2	.1	14.2	11.7
E	2.5	5.7	5.6	2.9	.5	.1	-----	-----	17.3	8.5	1.4	5.6	5.3	1.6	.1	.1	-----	-----	14.2	8.3	1.5	6.5	8.0	5.7	1.5	.3	.1	+	23.6	10.5
SE	2.5	4.1	2.9	1.0	.2	-----	-----	-----	10.7	7.1	1.6	5.2	3.3	.7	-----	-----	-----	-----	10.8	7.1	1.5	5.8	4.4	2.9	.5	.1	-----	-----	15.1	8.8
S	2.8	5.3	2.0	.5	.1	.1	-----	-----	10.6	6.0	3.2	5.9	2.2	.3	.1	-----	-----	-----	11.6	5.6	2.2	5.6	3.3	1.0	.5	.1	.1	-----	12.9	7.9
SW	2.9	12.2	9.2	3.2	1.2	.7	.2	.1	29.6	9.1	2.2	10.4	8.2	2.1	.4	.3	+	-----	23.6	8.0	1.5	6.7	5.9	2.8	1.5	.6	.5	+	19.5	10.7
W	2.5	10.9	12.4	6.1	1.9	1.0	.3	.1	35.3	10.4	1.8	10.9	15.1	4.7	.9	.5	.2	+	34.0	9.5	1.0	7.0	8.9	3.9	1.6	.7	.5	2	23.9	11.3
NW	1.8	5.2	5.1	2.0	.9	.5	.1	+	15.6	9.5	1.9	6.6	7.2	2.7	.9	.3	.2	+	19.7	9.5	1.0	4.5	5.6	2.7	1.3	.6	.4	.4	16.6	12.4
Calm	3.6	-----	-----	-----	-----	-----	-----	-----	3.6	--------	2.2	-----	-----	-----	-----	-----	-----	-----	2.2	--------	2.4	-----	-----	-----	-----	-----	-----	-----	2.4	--------
Total	16.8	35.3	29.1	12.8	3.9	1.6	.4	.2	145.2	8.5	12.4	35.1	33.0	11.6	5.1	2.2	.6	.2	147.4	9.1	10.7	30.4	30.2	17.2	6.9	2.5	1.4	.8	145.7	10.5

Direction	April										May										June									
N	0.9	3.9	4.8	4.2	2.6	1.4	0.7	0.2	18.6	14.0	0.8	4.1	5.8	4.4	1.6	0.6	0.2	0.2	17.7	12.0	0.7	3.0	3.5	1.8	.3	0.6	0.3	+	11.1	12.0
NE	.6	3.5	6.0	3.9	1.9	.8	.3	-----	17.0	12.4	.8	3.7	5.7	4.0	2.1	.5	.1	.1	17.0	12.2	.5	3.4	3.9	3.4	2.1	.7	.2	-----	14.2	12.6
E	1.4	7.5	9.1	4.9	1.6	.6	+	.1	25.0	10.3	1.6	7.0	7.8	5.8	2.5	.5	+	.1	26.2	10.9	.9	6.1	9.8	5.4	1.9	.3	+	-----	24.6	10.8
SE	1.4	7.6	5.8	2.9	1.2	.5	+	-----	19.3	9.6	1.4	6.6	5.8	3.7	1.1	.1	-----	-----	18.7	9.4	1.2	6.0	7.7	3.3	.5	-----	-----	-----	18.7	9.2
S	1.9	6.4	3.0	2.1	.9	.4	+	-----	14.8	8.9	2.1	6.1	4.7	2.6	.7	.2	+	-----	16.5	8.7	2.4	6.8	7.8	4.4	.7	.1	-----	+	22.1	9.2
SW	1.2	5.9	6.0	2.7	.8	.4	-----	+	17.0	9.5	1.2	5.6	5.3	2.0	.7	.2	-----	-----	15.0	9.1	1.4	7.2	9.3	4.9	1.4	.1	-----	+	24.3	10.0
W	.9	5.6	7.9	3.0	.7	.2	.1	.1	18.5	9.9	.9	4.8	6.6	2.8	.8	.3	.1	-----	16.3	9.9	.8	5.9	7.7	2.9	1.1	.4	.1	.1	18.9	10.3
NW	.9	4.7	4.5	1.8	.6	.3	.1	.1	13.0	10.0	.9	4.0	5.1	2.4	.7	.1	.1	.1	13.3	10.0	.9	3.2	3.8	1.2	.4	.2	+	.1	9.8	9.5
Calm	2.6	-----	-----	-----	-----	-----	-----	-----	2.6	--------	3.7	-----	-----	-----	-----	-----	-----	-----	3.7	--------	2.1	-----	-----	-----	-----	-----	-----	-----	2.1	--------
Total	9.6	30.8	31.8	16.8	6.9	2.9	.8	.3	145.8	10.2	11.2	29.7	32.2	18.4	6.5	1.6	.3	.2	144.4	9.7	8.5	28.8	36.5	18.1	6.2	1.5	.4	.2	145.8	10.0

Direction	July										August										September									
N	1.0	3.0	2.7	1.7	1.0	0.4	0.2	0.1	10.1	11.1	1.2	3.1	3.1	1.9	1.1	0.4	0.1	+	11.0	10.9	1.3	2.9	3.5	2.3	0.7	0.3	0.1	0.1	11.1	10.3
NE	.7	3.2	4.3	2.9	1.6	.4	.1	-----	13.2	11.6	1.0	3.5	3.8	2.6	1.4	.3	.1	-----	12.8	11.0	1.0	3.5	4.9	3.2	1.0	.2	+	-----	13.8	10.6
E	2.0	7.8	10.9	4.0	1.2	.2	+	-----	25.9	9.4	1.2	7.4	9.2	4.0	.6	.1	-----	-----	22.6	9.3	2.2	9.5	9.8	4.6	.7	+	-----	-----	26.8	8.9
SE	1.9	8.1	8.1	2.8	.2	-----	-----	-----	21.0	8.3	2.3	8.1	7.3	1.7	.2	+	-----	-----	19.6	7.8	2.2	8.6	6.4	2.1	.1	-----	-----	-----	19.3	7.7
S	3.3	9.7	6.8	2.4	.2	+	-----	-----	22.4	7.4	3.4	8.2	6.6	1.7	.1	+	-----	-----	20.1	7.2	3.2	8.0	4.2	1.3	.4	.1	-----	-----	17.1	7.1
SW	2.4	8.7	6.1	1.7	.3	-----	-----	-----	19.2	7.5	2.3	9.1	8.1	1.8	.2	+	-----	-----	21.6	7.7	2.3	8.0	6.5	1.9	.5	+	-----	-----	19.2	8.0
W	1.3	6.4	5.0	.9	.3	.1	-----	-----	14.1	7.8	1.6	7.8	8.1	1.9	.1	.2	+	-----	19.8	8.2	1.6	8.7	9.1	2.1	.4	.1	-----	-----	21.9	8.3
NW	1.1	4.5	3.2	.9	.5	.1	.1	+	10.3	8.4	1.1	4.2	4.3	1.8	.3	.1	.1	-----	11.8	8.9	1.0	4.0	4.4	.9	.3	.1	+	-----	10.6	8.5
Calm	4.8	-----	-----	-----	-----	-----	-----	-----	4.8	--------	4.2	-----	-----	-----	-----	-----	-----	-----	4.2	--------	3.7	-----	-----	-----	-----	-----	-----	-----	3.7	--------
Total	15.3	36.0	32.8	11.5	3.4	.7	.2	.1	141.0	8.2	14.9	36.1	34.3	11.1	2.5	.9	.2	+	143.5	8.1	15.0	36.9	32.9	12.1	2.5	.5	.1	.1	143.5	8.1

Direction	October										November										December									
N	1.8	4.1	3.5	1.9	1.0	0.3	-----	-----	12.6	9.5	1.5	3.9	3.2	2.8	1.4	0.3	0.1	0.1	13.3	11.2	1.9	4.7	3.4	2.6	0.9	0.4	0.2	-----	14.0	9.7
NE	1.5	4.3	4.6	2.7	1.1	.3	+	-----	14.5	10.0	1.5	4.4	3.1	2.5	0.7	.1	-----	-----	12.4	9.4	1.6	4.0	2.8	1.3	.4	.2	.1	-----	10.5	8.7
E	2.7	8.7	8.7	3.0	.3	.1	+	-----	23.6	8.3	2.6	7.4	4.0	1.0	.1	+	-----	-----	15.1	6.8	2.3	5.0	3.9	1.1	.1	+	-----	-----	12.5	7.3
SE	2.6	7.4	4.9	1.4	.2	-----	-----	-----	16.5	7.2	2.3	4.7	2.2	.5	.1	-----	-----	-----	9.7	6.4	1.7	2.8	1.6	.5	-----	-----	-----	-----	6.5	6.3
S	3.1	5.9	2.9	1.0	.3	-----	-----	-----	13.2	6.7	3.1	4.5	1.5	.3	+	+	-----	-----	9.4	5.3	3.3	5.0	1.0	.4	.1	-----	-----	-----	9.9	5.3
SW	2.4	7.7	5.4	1.7	.3	-----	-----	-----	17.5	7.6	3.7	11.9	7.7	1.2	.2	.1	-----	-----	24.8	6.9	4.0	14.7	9.9	2.9	.6	.3	.1	-----	32.6	7.9
W	2.7	10.4	10.3	2.4	.4	-----	+	-----	26.3	8.0	3.4	14.7	15.8	3.1	.8	.4	-----	-----	38.1	8.2	3.0	13.7	12.5	4.9	.8	.6	.2	0.1	35.8	9.0
NW	1.7	5.0	4.5	1.2	.3	+	-----	-----	12.8	7.9	2.4	6.3	5.4	2.1	.8	.3	+	-----	17.4	9.0	2.3	6.3	5.6	2.2	.3	.1	.2	.1	17.2	8.6
Calm	4.5	-----	-----	-----	-----	-----	-----	-----	4.5	--------	3.4	-----	-----	-----	-----	-----	-----	-----	3.4	--------	2.9	-----	-----	-----	-----	-----	-----	-----	2.9	--------
Total	18.5	38.0	30.4	10.2	2.5	.5	.1	-----	141.5	7.6	18.3	39.7	29.6	8.7	2.7	.7	.1	.1	143.6	7.6	18.0	39.8	28.2	10.2	2.3	1.1	.5	.1	141.9	7.8

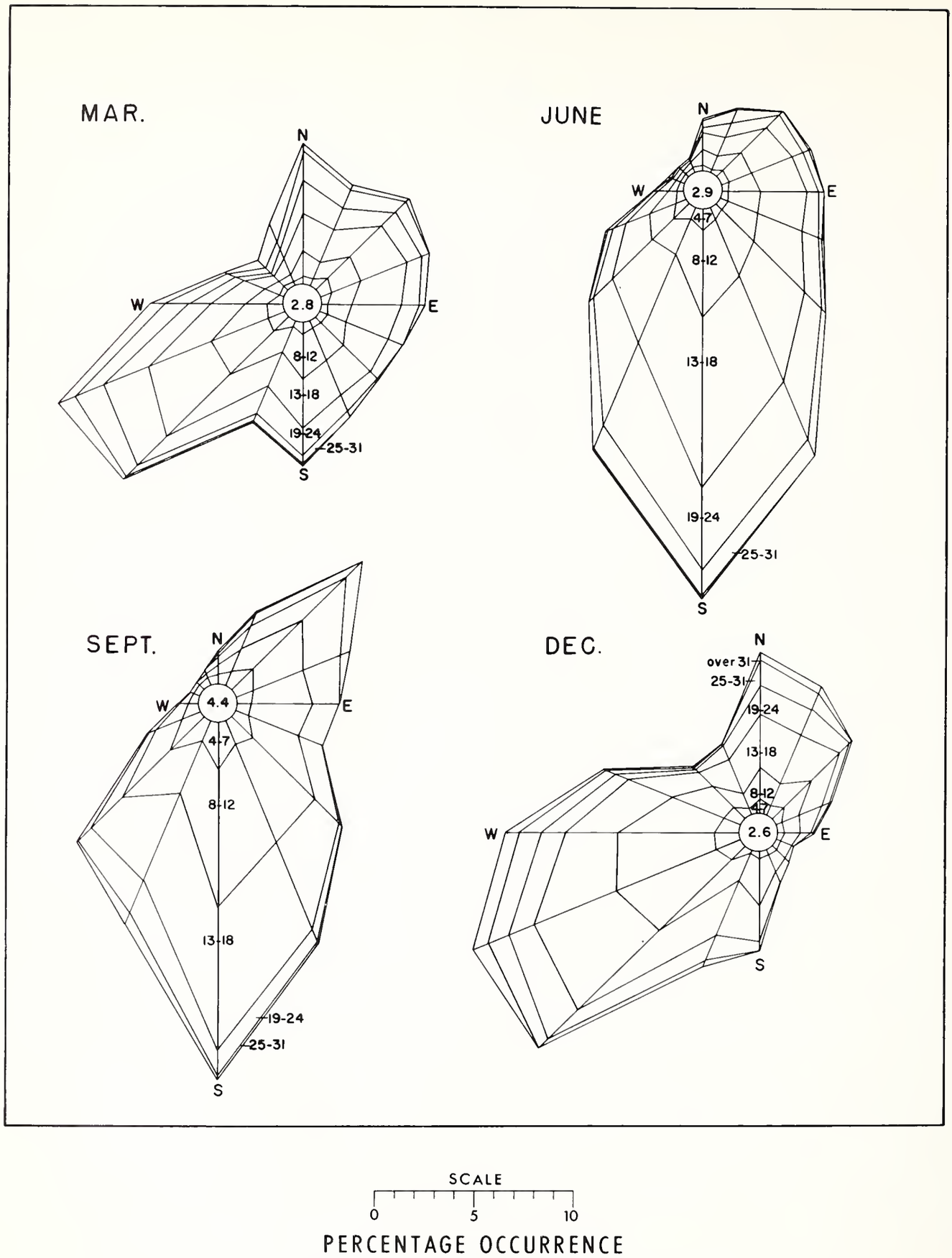


FIGURE 34.—Wind direction-speed polygons for Lubbock, Tex.

TABLE 18.—*Percentage frequency of occurrence of wind classified according to direction and speed, Lubbock, Tex., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.1	1.4	3.9	4.8	2.0	1.6	0.3	-----	14.1	15.3
NE	.6	2.7	6.0	5.7	1.4	.7	-----	-----	17.0	14.1
E	.6	2.7	5.0	3.5	.7	.1	-----	-----	12.5	12.9
SE	.2	1.8	4.4	3.6	.8	.1	-----	-----	11.0	11.5
S	.3	2.4	6.1	5.9	2.4	.9	-----	-----	17.9	12.9
SW	.3	3.7	11.0	10.0	4.1	1.5	.3	-----	31.0	13.5
W	.2	3.6	9.7	6.0	2.8	2.0	.6	0.1	25.0	14.1
NW	.1	1.9	3.9	2.8	1.0	.6	.1	-----	10.3	13.0
Calm	3.2	-----	-----	-----	-----	-----	-----	-----	3.2	-------
Total	4.3	12.3	33.7	32.3	11.2	5.2	1.0	.1	142.0	13.2

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	-----	1.0	3.7	5.1	3.2	3.5	1.1	0.2	17.8	18.3
NE	+	1.4	4.7	6.3	2.5	2.2	.5	.1	17.7	15.7
E	+	.9	4.6	5.1	1.0	.9	-----	-----	12.5	13.1
SE	+	1.7	5.4	4.5	.3	-----	-----	-----	12.0	11.0
S	-----	2.0	6.3	7.1	3.5	1.2	+	-----	20.1	14.4
SW	+	2.7	7.3	9.9	6.2	2.9	.5	.2	29.7	15.9
W	+	1.9	7.2	6.8	3.3	3.3	1.3	.4	24.3	16.8
NW	+	1.0	3.5	3.7	1.0	.7	.4	.2	10.5	15.0
Calm	3.0	-----	-----	-----	-----	-----	-----	-----	3.0	-------
Total	3.2	8.7	28.8	32.4	13.7	10.0	2.6	.7	147.6	15.2

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.1	1.0	2.6	4.5	3.4	3.0	0.9	0.8	16.2	19.6
NE	.1	1.8	4.0	6.4	3.0	2.2	.4	.1	18.1	16.4
E	-----	1.3	3.8	7.2	2.5	.8	+	-----	15.5	14.7
SE	+	1.2	4.4	6.1	2.2	.3	-----	-----	14.2	13.5
S	.1	1.3	5.5	6.3	3.8	1.1	.1	-----	18 2	14.9
SW	.2	2.3	7.7	9.7	6.0	2.8	1.0	.3	30.0	15.9
W	.2	2.0	5.0	6.2	4.1	3.3	1.4	.6	22.7	17.2
NW	.1	.8	1.4	2.4	1.3	1.2	.7	1.0	8.8	19.9
Calm	2.3	-----	-----	-----	-----	-----	-----	-----	2.3	-------
Total	2.8	8.1	23.4	33.2	17.6	10.1	3.0	1.7	146.0	16.4

Direction	April									
N	+	1.0	2.1	3.3	2.4	2.0	0.7	0.4	11.9	18.3
NE	+	2.1	4.4	7.5	4.8	3.2	.5	-----	22.5	16.6
E	-----	2.2	4.3	6.4	3.1	1.4	.2	+	17.7	15.0
SE	-----	1.4	3.6	4.9	2.2	.8	+	-----	12.9	14.5
S	-----	1.7	5.4	7.7	6.3	1.7	.3	+	23.1	16.1
SW	+	2.9	7.4	9.1	7.3	3.1	.8	.6	31.4	16.9
W	0.1	1.9	4.7	5.2	3.3	2.7	.9	.9	19.7	17.6
NW	.1	.8	1.6	1.7	.8	.6	.3	.4	6.2	16.1
Calm	1.7	-----	-----	-----	-----	-----	-----	-----	1.7	-------
Total	1.9	9.8	23.3	30.9	20.3	10.0	2.3	1.6	147.1	16.2

Direction	May									
N	+	1.2	2.8	4.1	2.0	1.1	0.1	+	11.2	15.2
NE	0.1	1.6	4.9	6.6	4.0	1.9	.1	-----	19.1	15.6
E	.1	1.7	5.4	5.8	3.1	1.8	.1	-----	17.9	14.9
SE	+	2.1	7.9	9.5	4.3	1.3	.1	+	25.3	14.6
S	-----	2.7	8.6	11.7	7.6	3.4	.2	0.1	34.3	15.6
SW	.1	2.2	5.3	6.5	3.4	2.2	.2	+	19.8	15.7
W	.1	1.8	3.3	3.2	1.5	.9	.2	.1	10.9	14.5
NW	+	1.0	1.5	1.7	.4	.1	.1	+	4.9	13.4
Calm	2.5	-----	-----	-----	-----	-----	-----	-----	2.5	-------
Total	2.7	9.8	27.7	33.2	17.8	8.0	.6	.2	145.9	14.7

Direction	June									
N	0.1	0.7	2.0	2.1	1.1	1.2	0.2	+	7.4	15.2
NE	.1	.9	3.3	5.1	2.3	1.4	.2	0.1	13.4	15.9
E	-----	1.1	4.5	7.0	2.2	.8	.1	-----	15.7	14.6
SE	+	1.5	7.0	11.8	5.4	1.4	.1	-----	27.1	15.4
S	-----	2.4	9.4	19.3	11.9	3.6	.2	-----	46.9	16.3
SW	.1	2.3	4.9	9.0	6.5	2.1	.2	-----	25.0	16.2
W	+	1.0	2.1	2.0	1.0	.4	.1	-----	6.6	14.0
NW	.1	.7	.8	.5	.3	.2	-----	-----	2.6	12.0
Calm	2.7	-----	-----	-----	-----	-----	-----	-----	2.7	-------
Total	2.9	7.4	23.3	38.8	19.8	7.1	.7	.1	147.4	15.2

Direction	July									
N	-----	0.9	1.5	0.9	0.2	0.2	+	+	3.7	11.7
NE	+	2.6	4.0	3.4	.8	.3	0.1	-----	11.2	11.8
E	+	2.8	6.0	4.4	1.0	.4	.1	-----	14.7	11.9
SE	-----	3.4	9.8	9.1	2.2	.4	-----	-----	24.9	12.5
S	+	4.4	14.8	23.0	8.2	.9	-----	-----	51.6	14.1
SW	+	4.9	7.4	10.8	4.0	.6	-----	-----	27.7	13.4
W	0.1	2.3	1.8	.9	.2	.1	-----	-----	5.4	9.9
NW	-----	.8	.8	.3	.1	.1	-----	+	2.2	10.7
Calm	3.2	-----	-----	-----	-----	-----	-----	-----	3.2	-------
Total	3.3	15.8	32.0	36.0	11.0	1.9	.1	+	144.6	12.5

Direction	August									
N	+	1.1	1.8	1.0	0.3	0.2	0.1	-----	4.6	12.1
NE	0.1	3.2	6.9	4.2	.8	.3	.1	-----	15.7	11.0
E	+	3.0	7.6	3.4	.4	.1	-----	-----	14.4	9.9
SE	-----	4.7	13.2	5.3	.6	.1	-----	-----	24.0	10.6
S	.2	8.6	18.7	12.7	2.2	.2	-----	-----	42.5	11.2
SW	.2	5.3	10.4	8.0	1.9	.2	+	-----	26.0	11.4
W	.1	2.1	3.4	.9	.1	+	+	-----	6.7	9.5
NW	+	.6	.7	.1	.1	-----	-----	-----	1.5	8.5
Calm	5.9	-----	-----	-----	-----	-----	-----	-----	5.9	-------
Total	6.5	20.8	43.7	24.0	4.3	.7	.1	-----	141.3	10.2

Direction	September									
N	-----	1.7	1.9	1.9	0.9	0.2	+	-----	6.7	12.2
NE	-----	3.1	7.5	6.5	2.4	.2	+	+	19.7	12.5
E	+	2.3	8.5	4.6	.5	+	-----	-----	16.1	11.1
SE	0.1	3.5	12.5	7.9	.9	.1	-----	-----	25.0	11.3
S	.1	4.8	15.3	16.9	3.9	.7	0.1	-----	41.7	12.9
SW	.1	4.5	7.6	7.4	2.8	.6	.1	-----	23.1	12.5
W	-----	1.8	2.1	.5	.1	-----	-----	-----	4.6	8.7
NW	-----	.9	.6	.2	+	+	-----	-----	1.8	8.3
Calm	4.1	-----	-----	-----	-----	-----	-----	-----	4.1	-------
Total	4.4	16.2	39.3	31.1	7.8	1.1	.1	+	142.8	11.5

Direction	October									
N	+	1.0	3.0	3.7	1.7	0.8	0.2	+	10.4	14.3
NE	+	1.6	6.2	6.5	1.8	.7	.1	-----	16.8	13.6
E	-----	1.6	4.6	3.8	.9	.2	-----	-----	11.2	12.2
SE	-----	2.5	6.9	5.9	1.3	.2	-----	-----	16.7	11.8
S	+	3.6	10.8	11.7	4.2	.8	.2	-----	31.3	13.0
SW	0.1	5.9	12.3	10.5	3.2	.9	.1	-----	32.8	12.2
W	+	3.7	7.2	3.2	.9	.6	-----	-----	15.6	11.2
NW	-----	1.4	2.9	1.1	.4	.1	-----	-----	5.9	10.6
Calm	3.8	-----	-----	-----	-----	-----	-----	-----	3.8	-------
Total	3.9	14.8	37.6	31.3	9.5	2.6	.3	+	144.5	12.1

Direction	November									
N	+	1.1	4.4	5.6	3.2	2.1	0.3	0.1	16.7	16.2
NE	0.1	1.6	4.7	6.8	3.4	1.8	.1	+	18.5	15.7
E	+	1.1	3.0	3.6	.8	.3	-----	-----	8.8	13.0
SE	-----	1.1	4.0	3.3	.9	.3	-----	-----	9.5	11.9
S	+	1.7	7.2	7.3	2.2	.6	.1	-----	19.0	13.3
SW	.1	3.6	12.3	11.9	3.8	1.4	.4	.1	33.5	13.6
W	.1	3.2	10.5	6.8	2.4	1.4	.4	.1	24.9	13.5
NW	-----	1.6	4.5	2.9	1.0	.4	.1	-----	10.5	12.5
Calm	2.5	-----	-----	-----	-----	-----	-----	-----	2.5	-------
Total	2.7	10.5	35.6	32.8	12.1	5.2	.9	.3	143.9	13.5

Direction	December									
N	0.1	1.5	3.6	7.4	3.6	2.2	0.6	0.1	19.2	16.9
NE	.2	1.6	4.3	6.0	2.5	1.1	.3	.1	16.0	14.7
E	.1	.9	2.5	1.8	.5	.1	-----	-----	5.8	11.8
SE	.1	.8	2.2	1.0	-----	-----	-----	-----	4.1	9.9
S	+	.9	4.7	5.5	1.9	.5	.1	-----	13.7	14.0
SW	.1	2.6	11.9	13.1	4.9	2.2	.8	.2	35.8	14.9
W	.1	3.6	13.0	9.4	3.3	2.6	1.3	.4	33.7	14.6
NW	+	2.1	5.1	5.4	1.7	.6	.2	.1	15.1	13.5
Calm	2.2	-----	-----	-----	-----	-----	-----	-----	2.2	-------
Total	2.6	9.9	33.2	33.1	12.3	6.3	2.0	.5	145.6	14.2

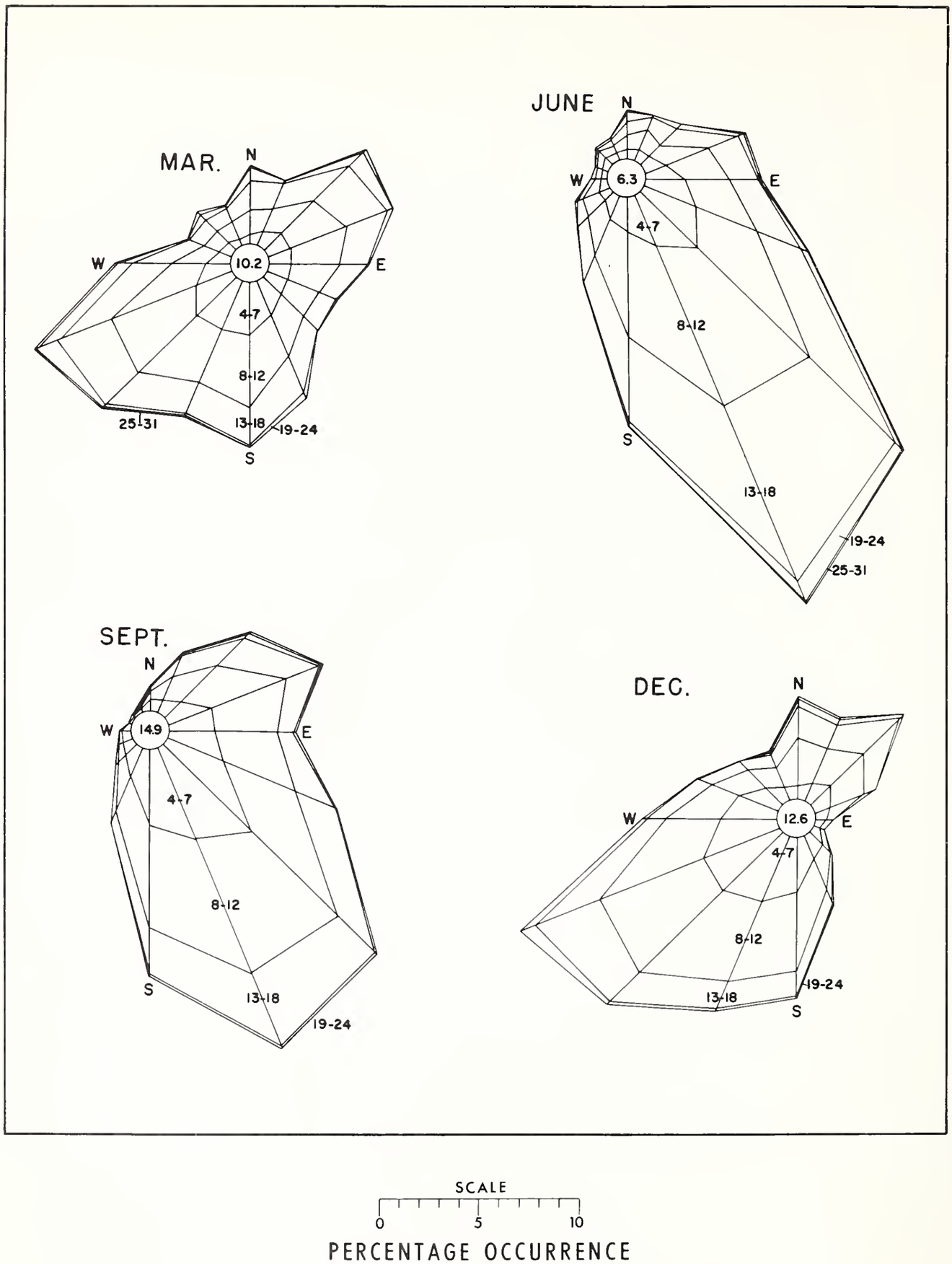


FIGURE 35.—Wind direction-speed polygons for Midland, Tex.

TABLE 19.—*Percentage frequency of occurrence of wind classified according to direction and speed, Midland, Tex., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	3.4	3.3	2.2	0.5	0.2	----	----	9.8	9.9
NE	.6	4.3	7.3	4.4	.6	.2	----	----	17.3	10.7
E	.5	4.4	4.5	2.6	.4	.1	----	----	12.6	10.0
SE	.8	4.4	4.2	2.0	.1	----	----	----	11.5	8.8
S	1.7	8.8	8.5	3.3	.2	----	----	----	22.6	8.4
SW	2.0	10.6	10.1	4.4	.3	.2	+	----	27.5	8.7
W	1.0	6.6	6.5	4.0	.7	.2	+	----	19.0	9.3
NW	.6	3.7	3.2	2.2	.5	+	----	----	10.2	8.8
Calm	11.7	----	----	----	----	----	----	----	11.7	----
Total	16.9	31.3	32.3	16.7	2.4	.6	+	----	142.2	8.2

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.6	2.7	3.8	4.3	0.9	0.5	+	----	12.7	12.1
NE	.5	3.3	8.7	5.3	.6	.2	----	----	18.5	10.1
E	.6	4.5	8.7	3.5	.1	----	----	----	17.3	8.3
SE	.7	5.0	6.9	2.6	.2	----	----	----	15.3	8.6
S	.8	6.0	9.5	5.4	.4	+	----	----	22.2	9.7
SW	1.0	7.7	9.9	5.9	1.1	.4	.1	----	26.0	10.5
W	.9	5.3	4.8	4.6	1.1	.7	.2	+	17.6	11.8
NW	.4	3.0	3.0	2.1	.4	.1	+	----	8.9	10.1
Calm	6.2	----	----	----	----	----	----	----	6.2	----
Total	10.0	26.1	36.8	22.5	3.1	1.3	.2	+	144.8	9.6

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	1.6	3.4	3.5	1.0	0.1	+	----	10.1	12.3
NE	.1	3.1	6.5	6.1	1.6	.3	----	----	17.7	11.6
E	.4	3.4	7.1	4.6	.5	+	----	----	16.0	10.1
SE	.9	4.3	5.6	3.9	.3	+	----	----	15.1	9.7
S	1.1	7.3	8.9	5.6	.4	.1	----	----	23.4	9.7
SW	1.2	7.4	11.5	6.9	1.5	.3	----	----	28.8	10.7
W	.3	3.7	7.0	5.6	2.0	.3	+	----	19.0	12.0
NW	.3	1.5	2.7	2.2	.7	.2	----	----	7.5	11.2
Calm	7.0	----	----	----	----	----	----	----	7.0	----
Total	10.2	21.9	35.1	25.9	5.7	1.1	.1	----	144.6	10.2

Direction	April									
N	0.1	1.6	3.3	3.7	1.2	0.2	+	----	10.1	12.5
NE	.1	2.1	5.9	7.1	2.4	.3	----	----	18.0	13.0
E	.3	2.5	6.3	5.4	1.5	.1	----	----	16.1	11.6
SE	.6	4.9	7.3	5.7	1.2	.1	----	----	19.7	11.2
S	.9	9.0	11.6	7.0	.7	.1	----	----	29.2	10.0
SW	.8	7.5	7.5	6.1	1.6	.4	----	----	23.9	10.5
W	.3	4.0	4.9	6.0	2.5	.7	+	----	18.5	11.6
NW	.2	1.3	1.8	2.3	.5	.1	----	----	6.1	10.9
Calm	6.3	----	----	----	----	----	----	----	6.3	----
Total	8.7	22.0	32.0	28.4	7.6	1.3	.1	----	147.9	10.8

Direction	May									
N	0.3	2.3	3.7	2.5	0.5	----	----	----	9.3	10.8
NE	.5	3.0	6.2	4.9	1.0	.1	----	----	15.8	11.4
E	.6	5.4	9.9	7.0	.9	.1	----	----	23.8	10.8
SE	1.0	7.5	13.2	12.5	1.2	.2	----	----	35.6	11.1
S	.5	5.9	12.1	11.2	1.2	.1	----	----	31.0	11.2
SW	.2	2.8	5.6	3.2	.7	.1	----	----	12.6	10.3
W	.4	2.4	3.4	1.9	.6	----	----	----	8.8	9.8
NW	.2	2.3	2.5	1.4	.2	----	----	----	6.7	9.4
Calm	4.7	----	----	----	----	----	----	----	4.7	----
Total	7.5	22.2	37.1	28.9	4.0	.3	----	----	148.3	10.3

Direction	June									
N	0.2	1.5	2.2	1.7	0.7	0.1	----	----	6.4	11.2
NE	.1	2.3	4.2	3.5	.8	.1	0.1	----	11.0	11.3
E	.4	5.9	7.7	5.4	.9	.1	.1	----	20.6	10.6
SE	1.4	9.6	19.9	18.2	2.0	.1	----	----	51.3	11.4
S	.5	5.9	16.2	15.5	1.4	.1	----	----	39.5	11.5
SW	.3	2.4	4.1	2.6	.1	----	----	----	9.5	10.0
W	.1	1.1	1.6	.6	.1	----	----	----	3.4	9.1
NW	+	1.1	1.3	.4	.1	----	----	----	3.0	9.3
Calm	4.0	----	----	----	----	----	----	----	4.0	----
Total	6.3	20.1	38.0	31.3	3.9	.3	.1	----	148.7	10.6

Direction	July									
N	0.3	0.8	1.0	0.5	+	0.1	----	----	2.8	9.2
NE	.5	2.8	3.3	1.9	.2	.1	----	----	8.9	9.5
E	1.0	6.5	9.7	5.1	.4	.1	----	----	22.7	9.8
SE	2.3	13.8	24.6	16.0	1.5	----	----	----	58.3	10.3
S	1.7	8.6	16.2	11.4	1.0	----	----	----	38.9	10.0
SW	.5	1.7	2.8	1.2	.1	----	----	----	6.2	8.2
W	.1	.6	.6	.2	----	----	----	----	1.5	7.5
NW	.1	.4	.4	.2	----	----	----	----	1.0	8.3
Calm	7.3	----	----	----	----	----	----	----	7.3	----
Total	12.0	24.0	38.4	23.4	2.1	.1	----	----	147.6	9.2

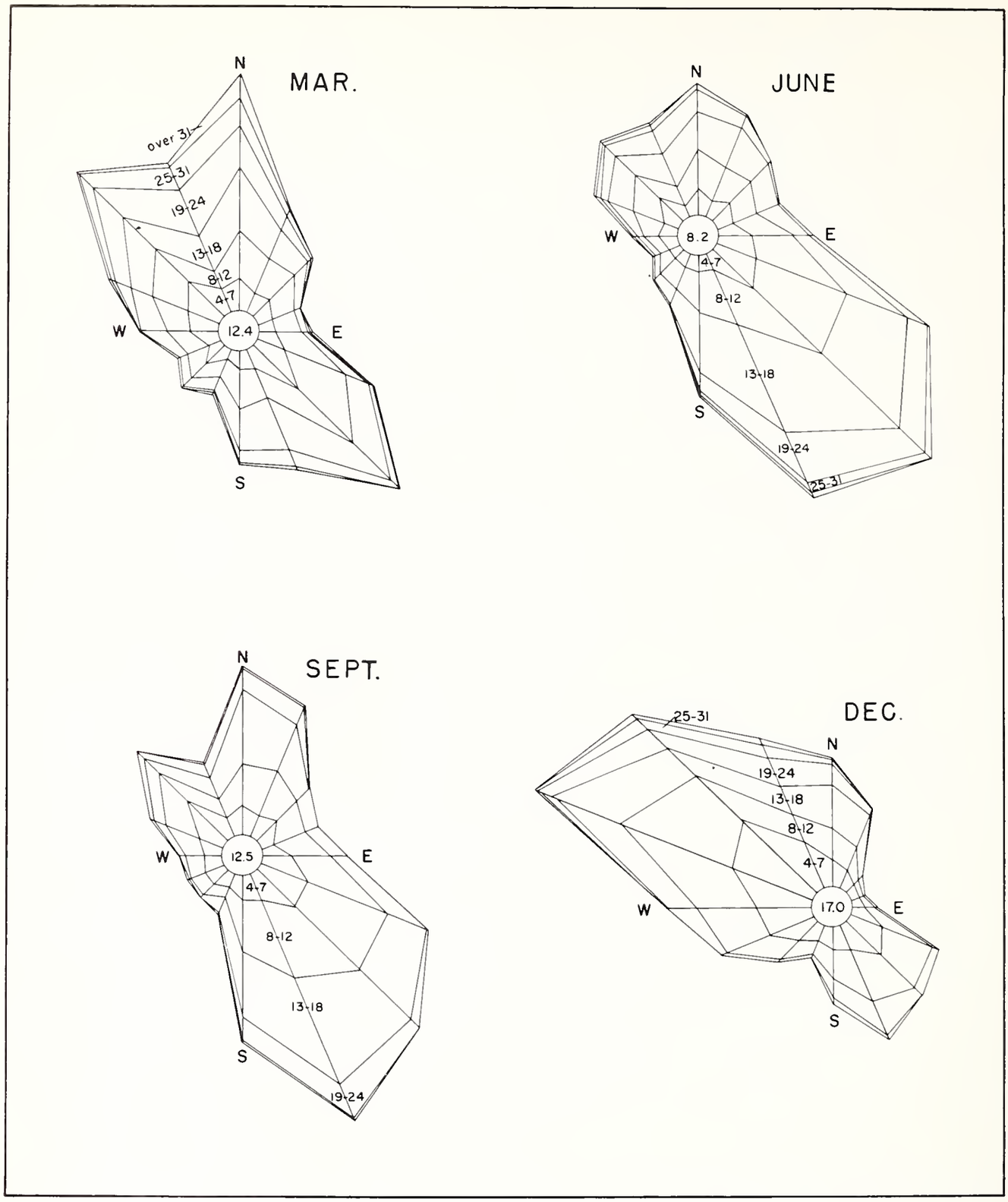
Direction	August									
N	0.5	1.5	1.9	0.8	----	----	----	----	4.8	8.5
NE	.3	3.3	5.8	3.3	0.1	+	----	----	12.6	9.6
E	.5	6.9	11.2	4.7	.5	0.1	----	----	23.8	9.6
SE	1.8	14.7	20.6	8.0	.3	----	----	----	45.4	9.1
S	1.7	12.0	15.4	5.5	.1	----	----	----	34.6	8.8
SW	.9	3.5	3.9	1.2	.1	----	----	----	9.6	7.8
W	.3	.8	.6	.3	.1	----	----	----	2.0	6.8
NW	.3	1.0	.4	.3	----	----	----	----	2.0	7.9
Calm	10.5	----	----	----	----	----	----	----	10.5	----
Total	15.2	29.5	39.2	15.4	.6	.1	----	----	145.3	8.1

Direction	September									
N	0.2	1.6	1.9	1.4	0.2	0.1	----	----	5.4	10.2
NE	.6	4.1	8.0	4.8	.6	.2	----	----	18.2	10.5
E	.8	7.7	11.0	4.8	.3	.1	----	----	24.6	9.2
SE	2.4	14.4	17.4	8.8	.3	----	----	----	43.2	9.3
S	1.4	10.4	14.4	6.9	.3	----	----	----	33.3	9.3
SW	.5	2.8	2.5	.9	+	----	----	----	6.6	8.0
W	.2	1.0	.3	.1	----	----	----	----	1.6	6.1
NW	+	.5	.2	.1	.1	----	----	----	.8	8.7
Calm	10.5	----	----	----	----	----	----	----	10.5	----
Total	14.9	28.9	36.8	18.0	1.2	.2	----	----	144.2	8.3

Direction	October									
N	0.2	3.3	3.1	1.9	0.4	0.1	----	----	9.0	10.0
NE	.3	4.2	7.0	4.5	.8	.2	+	----	17.0	10.7
E	.3	4.7	8.5	4.5	.5	.1	----	----	18.6	10.0
SE	.5	7.4	10.8	5.9	.7	+	----	----	25.3	9.6
S	.6	9.6	14.5	6.4	.3	----	----	----	31.4	9.6
SW	.4	6.7	7.9	3.2	.2	----	----	----	18.4	9.1
W	.3	3.2	2.6	1.9	.2	----	----	----	8.4	9.1
NW	.2	2.6	1.6	.5	.1	----	----	----	4.9	7.7
Calm	10.3	----	----	----	----	----	----	----	10.3	----
Total	12.4	28.0	37.6	19.6	2.1	.3	+	----	143.3	8.8

Direction	November									
N	0.3	3.1	5.4	3.5	0.7	0.2	+	----	13.1	11.0
NE	.3	3.7	5.8	5.2	1.3	.2	+	----	16.4	11.4
E	.3	3.7	4.2	2.1	.2	----	----	----	10.6	8.7
SE	.4	4.3	5.4	2.4	.3	----	----	----	12.8	8.7
S	.5	7.7	10.3	3.2	.3	----	----	----	22.0	9.0
SW	.8	9.4	12.3	6.1	.5	----	----	----	29.0	9.6
W	.4	6.9	6.3	3.9	.5	.1	----	----	18.0	9.6
NW	.4	3.9	3.5	1.4	----	----	----	----	9.2	8.4
Calm	10.2	----	----	----	----	----	----	----	10.2	----
Total	12.5	29.2	36.3	19.0	2.6	.4	.1	----	141.3	8.8

Direction	December									
N	0.3	2.4	5.4	3.6	0.8	0.2	----	----	12.7	11.5
NE	.3	3.1	6.0	4.4	.6	.1	----	----	14.6	10.9
E	.2	1.7	2.4	.6	----	----	----	----	4.8	8.4
SE	.5	2.6	2.6	.9	.1	----	----	----	6.5	8.7
S	.8	7.8	10.2	3.5	.2	----	----	----	22.4	8.8
SW	.8	12.0	15.9	7.0	1.0	+	----	----	36.8	9.6
W	.5	9.0	9.7	5.3	1.0	+	+	----	25.5	9.7
NW	.2	4.0	3.8	2.1	.1	.1	----	----	10.3	9.2
Calm	10.1	----	----	----	----	----	----	----	10.1	----
Total	12.6	28.5	37.8	18.3	2.4	.3	+	----	143.7	8.7



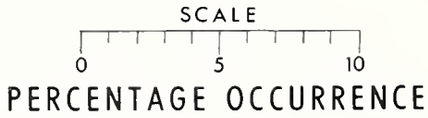


FIGURE 36.—Wind direction-speed polygons for North Platte, Nebr.

TABLE 20.—*Percentage frequency of occurrence of wind classified according to direction and speed, North Platte, Nebr., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	1.4	4.2	6.0	7.0	2.5	0.6	+	-----	21.7	12.2	0.7	3.7	4.9	6.6	4.2	2.5	0.3	0.1	23.0	14.6	0.9	3.8	5.0	6.5	5.1	2.9	1.2	0.2	25.7	15.6
NE	.6	2.0	3.1	1.8	.2	-----	-----	-----	7.8	9.4	.6	2.6	2.5	1.4	.6	.1	-----	-----	7.8	10.0	.6	2.8	4.7	2.7	.9	.4	.1	-----	12.1	11.5
E	.8	3.9	3.5	.7	-----	-----	-----	-----	8.9	7.6	.7	2.8	3.8	2.1	.4	+	-----	-----	9.8	10.2	.9	2.9	5.5	1.9	.3	.1	-----	-----	11.6	10.0
SE	1.1	6.5	8.0	4.9	1.0	+	-----	-----	21.5	9.6	.8	4.3	8.3	6.6	1.8	.2	-----	-----	22.0	11.6	1.0	5.4	8.3	6.4	1.7	.2	-----	+	23.1	11.3
S	1.0	3.2	5.6	4.7	.5	-----	-----	-----	15.2	9.9	.4	2.3	5.8	5.9	1.4	.2	-----	-----	16.0	12.2	.4	2.3	4.2	5.5	1.6	.3	-----	-----	14.3	12.4
SW	.9	3.3	3.7	.7	+	-----	-----	-----	8.6	7.4	.8	3.6	3.9	1.8	.1	-----	-----	-----	10.1	8.5	.4	2.4	2.8	1.7	.3	.1	-----	-----	7.8	9.2
W	1.9	7.2	7.0	3.6	.8	-----	-----	-----	20.5	8.5	1.3	6.4	8.2	3.9	.5	.4	.2	.1	21.0	9.4	.7	3.5	4.0	2.7	1.0	.3	.1	.1	12.4	9.9
NW	2.2	9.5	8.3	6.7	2.8	.9	0.1	-----	30.3	10.6	1.2	7.4	8.1	6.0	3.5	2.4	.6	.1	29.3	12.4	1.5	5.2	4.9	5.2	5.2	2.4	.4	.2	24.9	14.0
Calm	8.4	-----	-----	-----	-----	-----	-----	-----	8.4	--------	6.5	-----	-----	-----	-----	-----	-----	-----	6.5	--------	7.4	-----	-----	-----	-----	-----	-----	-----	7.4	--------
Total	15.4	27.6	30.6	19.9	5.4	1.0	.1	-----	142.9	9.2	11.0	22.9	30.4	23.2	8.1	3.6	.7	.1	145.5	10.9	12.4	20.3	27.2	22.7	10.9	4.6	1.5	.3	139.3	11.7

Direction	April										May										June									
N	0.7	3.0	5.3	8.3	5.0	2.3	0.9	0.2	25.6	16.0	0.7	2.8	5.1	6.1	3.8	1.0	0.2	+	19.7	14.0	0.6	2.7	4.6	5.6	2.8	0.7	+	0.1	17.1	13.3
NE	.8	1.9	4.0	4.3	1.6	.1	.1	-----	12.7	12.2	.5	2.9	4.5	4.1	1.7	.2	+	-----	14.0	11.9	.5	2.8	4.3	4.4	.8	.2	-----	-----	12.8	11.3
E	.8	4.1	6.5	3.1	.7	.1	-----	-----	15.2	10.0	.7	4.6	6.0	3.3	.8	.1	-----	-----	15.5	10.1	.7	4.3	7.9	4.9	1.2	.1	-----	-----	19.1	10.5
SE	.5	5.4	8.8	8.3	3.8	1.5	.3	.1	28.7	12.8	.9	6.4	11.4	10.9	5.9	1.6	.2	+	37.2	13.1	.7	5.5	12.1	14.0	5.4	1.1	0.1	.1	38.9	13.1
S	.5	2.6	4.5	5.5	3.2	1.3	.3	-----	17.9	13.8	.6	2.8	5.5	7.6	4.5	1.1	.3	+	22.4	14.3	.4	2.3	6.0	9.4	3.8	.9	.1	.1	23.0	14.6
SW	.4	2.3	2.1	1.8	.7	.3	+	-----	7.5	10.2	.6	2.3	2.0	1.2	.5	+	.1	+	6.7	9.6	.4	1.9	2.5	1.5	.4	.1	-----	-----	6.8	10.6
W	.4	3.2	3.4	3.0	1.5	.6	.2	-----	12.2	11.6	.7	3.5	2.8	2.2	1.0	.1	-----	-----	10.3	9.9	.7	2.3	2.8	1.9	.8	.3	-----	.1	8.9	10.7
NW	.6	3.6	4.1	5.3	3.4	2.3	.8	.2	20.4	15.5	.9	3.8	3.5	4.0	2.6	1.0	.2	0.2	16.2	13.0	.8	3.0	4.3	4.3	2.3	.7	+	.2	15.7	12.8
Calm	4.8	-----	-----	-----	-----	-----	-----	-----	4.8	--------	4.4	-----	-----	-----	-----	-----	-----	-----	4.4	--------	4.7	-----	-----	-----	-----	-----	-----	-----	4.7	--------
Total	7.9	18.2	26.3	26.9	13.5	5.4	1.5	.3	145.0	12.8	8.2	19.8	27.9	26.4	13.4	3.5	.6	.3	146.4	12.2	8.2	17.7	29.8	29.9	11.3	2.6	.2	.3	147.0	11.9

Direction	July										August										September									
N	0.7	3.4	5.9	4.2	1.3	0.2	-----	-----	15.7	11.1	1.1	3.2	4.6	4.1	1.4	0.3	+	-----	14.7	11.4	0.8	3.3	5.3	7.1	2.6	0.3	-----	-----	19.5	12.5
NE	1.0	3.8	5.1	3.7	.6	.1	-----	-----	14.4	10.0	.8	3.3	5.4	3.6	1.0	.1	-----	-----	14.1	10.2	.7	3.1	5.2	3.9	1.1	.1	-----	-----	14.1	11.0
E	1.0	5.7	9.9	4.4	.6	.1	-----	-----	21.6	9.4	1.1	5.9	10.7	4.7	.9	.1	-----	-----	23.4	9.3	.9	4.4	7.4	3.5	.1	+	-----	-----	16.4	9.1
SE	1.5	9.4	15.9	12.4	3.1	.5	+	-----	42.8	10.8	1.3	8.9	18.0	12.1	2.1	.1	-----	-----	42.5	10.6	.9	6.4	12.6	10.9	2.5	.1	-----	-----	33.4	11.4
S	.8	4.1	6.9	8.0	2.8	.4	+	-----	23.0	11.8	.8	4.1	8.1	8.6	2.1	.1	-----	-----	23.7	11.6	.6	3.3	7.2	9.4	3.0	.2	-----	-----	23.8	12.9
SW	.7	2.0	2.0	.9	.2	-----	+	-----	5.9	8.9	.9	2.4	2.2	.8	.2	-----	-----	-----	6.4	8.5	.8	2.6	1.9	1.1	.2	.1	-----	-----	6.7	8.5
W	.6	2.7	1.7	.7	.1	-----	0.1	-----	5.9	7.9	.6	2.3	1.6	.6	+	-----	-----	-----	5.1	7.4	1.0	3.0	3.3	1.0	.3	+	-----	-----	8.6	8.2
NW	.9	3.4	3.0	1.7	.5	.1	+	-----	9.7	9.4	.9	3.1	1.9	1.7	.6	.1	0.1	-----	8.4	9.7	1.1	4.8	4.6	2.7	1.4	.1	-----	-----	14.7	9.7
Calm	6.3	-----	-----	-----	-----	-----	-----	-----	6.3	--------	6.6	-----	-----	-----	-----	-----	-----	-----	6.6	--------	7.5	-----	-----	-----	-----	-----	-----	-----	7.5	--------
Total	11.6	24.1	34.2	23.6	5.7	.7	.1	-----	145.3	9.8	12.2	23.2	34.9	23.7	5.4	.4	.1	-----	144.9	9.8	12.5	21.6	31.6	26.5	7.3	.6	-----	-----	144.7	10.1

Direction	October										November										December									
N	1.0	3.3	3.7	5.2	2.7	1.4	0.1	-----	17.4	13.2	1.1	2.9	3.4	5.6	5.1	1.9	0.3	0.1	20.3	15.4	1.3	4.7	4.2	5.3	2.9	0.9	0.3	+	19.6	12.8
NE	.8	2.0	2.1	1.6	.4	+	-----	-----	6.8	9.3	.5	1.4	2.0	1.7	.8	.1	+	-----	6.4	10.8	.7	1.8	1.8	2.1	.3	+	-----	-----	6.7	10.1
E	.8	3.8	5.2	2.0	.1	+	-----	-----	12.0	8.5	.7	2.6	3.6	.9	.2	+	-----	-----	8.0	8.5	.7	2.5	3.3	.5	.1	-----	-----	-----	7.1	7.9
SE	1.3	6.1	12.6	9.1	2.3	.4	.1	-----	32.0	11.0	.8	3.5	5.4	3.2	.8	+	-----	-----	13.7	9.7	.9	5.1	7.6	2.6	.3	-----	-----	-----	16.5	8.9
S	.8	3.1	6.7	6.9	2.3	.5	.1	-----	20.4	12.3	.7	2.0	3.4	4.0	1.1	+	-----	-----	11.2	11.4	.6	3.2	4.9	2.9	.5	+	-----	-----	12.2	10.1
SW	.7	2.7	2.2	1.0	.2	-----	-----	-----	6.9	8.4	1.0	3.6	4.2	1.7	.3	-----	-----	-----	10.7	8.8	1.2	4.3	4.2	.7	-----	-----	-----	-----	10.4	7.5
W	1.3	5.1	4.6	2.6	.7	.2	.1	-----	14.6	9.5	1.8	7.4	10.6	5.7	1.0	.2	-----	+	26.7	9.9	1.9	9.0	10.7	5.3	.7	.1	-----	-----	27.6	9.1
NW	1.9	6.7	5.9	5.7	4.1	1.7	.2	-----	26.2	12.0	1.8	9.8	10.6	10.3	5.6	2.1	.3	.1	40.5	12.6	2.5	11.4	10.2	6.9	3.5	1.5	.5	0.1	36.6	11.1
Calm	8.8	-----	-----	-----	-----	-----	-----	-----	8.8	--------	7.5	-----	-----	-----	-----	-----	-----	-----	7.5	--------	10.0	-----	-----	-----	-----	-----	-----	-----	10.0	--------
Total	14.8	22.6	28.9	22.6	8.3	2.6	.3	-----	145.1	10.3	13.5	22.8	28.8	22.0	9.5	2.8	.4	.1	145.0	10.6	17.0	28.3	30.0	16.8	5.5	1.7	.6	.1	146.7	9.1

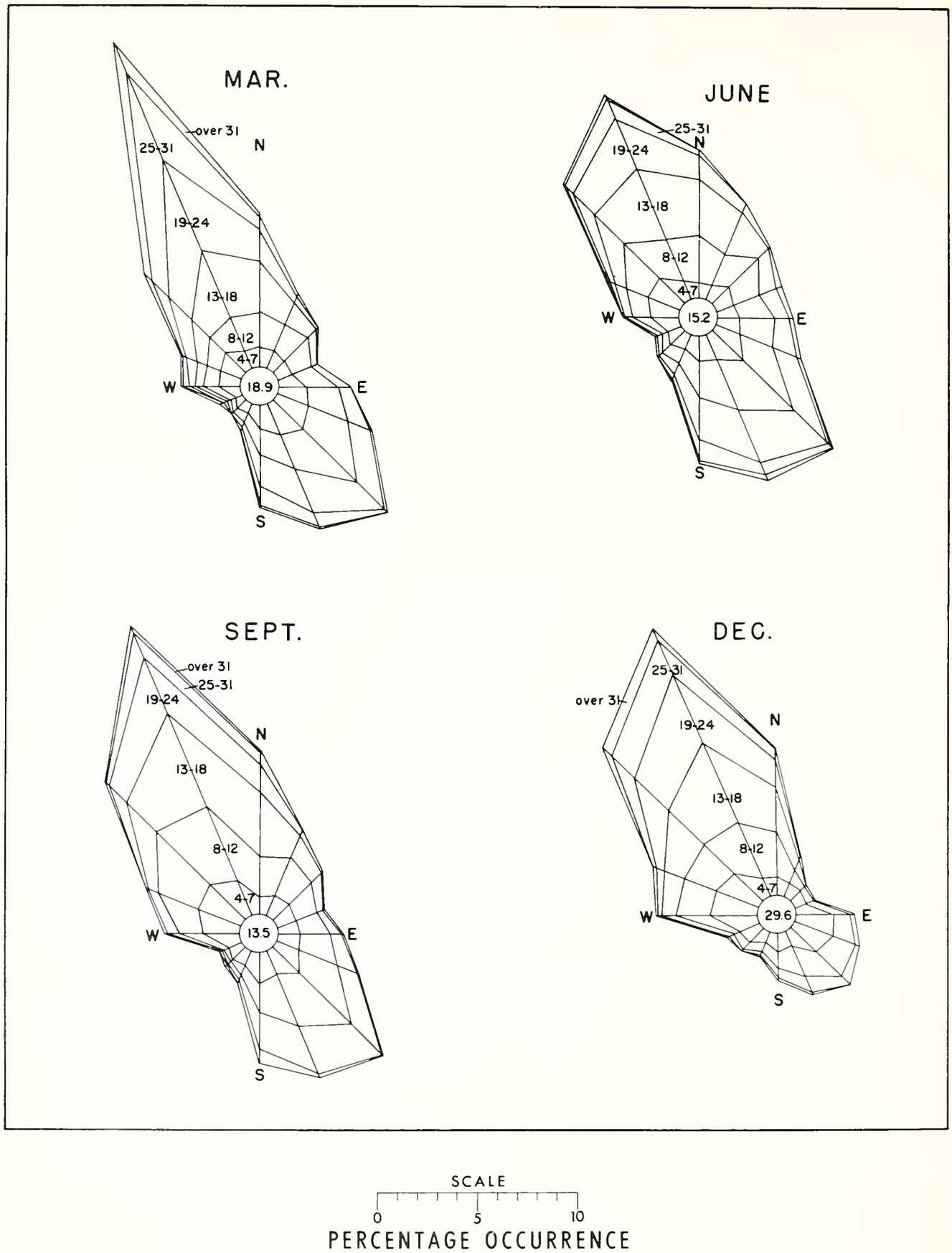


FIGURE 37.—Wind direction-speed polygons for Rapid City, S. Dak.

TABLE 21.—*Percentage frequency of occurrence of wind classified according to direction and speed, Rapid City, S. Dak., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	2.1	3.0	6.6	7.9	6.4	3.5	0.6	+	30.2	15.3	1.7	2.5	5.9	8.5	5.9	3.5	1.9	0.4	30.2	16.6	1.5	2.9	5.1	7.6	6.8	5.4	1.7	0.4	31.4	17.3
NE	3.1	3.4	3.2	1.1	.3	+	.1	----	11.3	7.4	2.1	1.7	2.8	1.8	.6	+	----	----	9.1	9.2	2.1	2.6	4.1	2.2	.4	.1	.1	----	11.6	9.1
E	5.9	5.1	2.7	.6	----	----	----	----	14.2	5.5	3.6	4.2	3.9	1.4	.1	+	----	----	13.3	7.2	2.8	3.9	4.8	2.1	.1	----	----	----	13.7	7.7
SE	4.1	6.4	6.4	2.4	.3	.1	----	----	19.7	7.8	3.4	5.5	6.8	3.3	.3	----	----	----	19.4	9.0	3.1	5.5	8.0	5.5	1.1	.1	----	----	23.3	9.3
S	2.2	2.2	3.0	1.9	.4	+	----	----	9.8	8.8	2.2	2.2	3.3	2.6	.7	----	----	----	10.9	10.2	2.6	3.4	3.8	4.3	2.0	.2	----	----	16.2	10.3
SW	2.2	1.6	.8	.3	.2	.1	+	----	5.2	7.0	2.4	2.0	1.4	.9	.5	.1	----	----	7.4	8.3	2.2	1.5	1.1	0.6	.3	+	.1	.1	5.9	7.4
W	3.6	3.8	2.2	1.4	.3	.2	.1	----	11.6	7.7	4.1	3.5	3.3	2.0	.6	.5	+	----	13.9	8.3	2.3	2.4	1.7	1.1	1.0	.5	.2	.1	9.4	9.4
NW	3.2	4.6	5.9	6.2	5.6	3.8	.9	0.1	30.2	14.4	2.8	3.9	6.3	7.5	5.2	3.6	2.4	.6	32.3	16.0	2.2	3.4	3.7	5.5	7.1	6.1	1.9	.5	30.4	17.5
Calm	11.2	----	----	----	----	----	----	----	11.2	----	8.4	----	----	----	----	----	----	----	8.4	----	5.7	----	----	----	----	----	----	----	5.7	----
Total	29.5	20.7	20.3	14.3	8.9	5.1	1.2	.1	143.4	9.5	24.5	17.5	22.7	18.3	9.3	4.7	2.5	.6	144.9	10.9	18.9	17.5	22.4	19.0	11.8	7.3	2.4	.6	147.6	12.1
	April										May										June									
N	0.9	2.9	5.6	8.3	7.7	4.3	0.6	0.1	30.3	16.8	1.2	2.7	6.2	10.0	5.3	2.0	0.2	----	27.7	14.8	1.5	2.6	6.4	9.1	4.6	1.5	0.2	----	25.7	14.2
NE	1.3	2.5	3.8	2.7	.7	.2	----	----	11.2	10.3	1.7	2.0	4.7	4.1	.8	.1	----	----	13.4	10.4	1.4	2.9	5.2	3.9	1.0	.1	----	----	14.5	10.5
E	1.9	2.5	3.6	2.5	.6	.1	----	----	11.2	9.6	2.1	3.3	5.3	3.1	.7	.1	----	----	14.7	9.4	1.8	3.4	5.0	2.9	.8	----	----	----	13.8	9.4
SE	2.4	3.8	6.9	5.7	1.3	.2	----	----	20.2	10.4	1.8	4.4	7.6	5.7	1.4	.4	----	----	21.2	10.9	1.9	4.9	8.1	6.5	1.3	.3	----	----	23.0	10.5
S	1.9	3.4	4.5	5.6	3.1	.9	----	----	19.6	12.4	1.9	3.1	5.2	5.7	3.6	1.0	----	+	20.5	13.0	1.8	3.6	5.4	5.6	2.1	.4	----	----	18.9	11.5
SW	1.9	2.0	1.4	1.6	.7	.2	----	----	7.9	8.8	1.7	2.0	1.3	1.3	1.2	.2	----	----	7.6	9.9	2.5	2.6	1.7	1.2	.5	.1	+	----	8.6	8.3
W	2.5	3.2	2.7	1.8	.6	.6	----	.1	11.5	9.2	2.9	2.9	2.2	1.5	.6	.3	.1	----	10.4	8.5	2.8	3.8	2.5	1.4	.6	.1	.1	----	11.3	8.2
NW	1.9	3.9	6.5	7.4	6.9	4.8	.8	.1	32.3	15.8	2.5	4.2	6.3	7.6	4.9	2.5	.3	----	28.3	13.8	2.5	4.4	6.0	6.6	4.6	1.8	.4	+	26.3	13.2
Calm	3.4	----	----	----	----	----	----	----	3.4	----	3.6	----	----	----	----	----	----	----	3.6	----	3.7	----	----	----	----	----	----	----	3.7	----
Total	13.8	16.8	24.1	23.5	14.0	7.0	.8	.1	147.6	12.4	14.6	16.8	26.2	25.8	12.1	4.1	.4	+	147.4	11.7	15.2	19.4	28.0	24.3	9.9	2.7	.4	+	145.8	10.9
	July										August										September									
N	1.4	2.9	7.2	8.1	4.0	1.1	0.1	----	24.8	13.4	1.5	3.9	7.9	6.0	2.6	0.7	0.1	----	22.7	12.0	1.3	3.9	8.1	9.6	4.9	2.1	0.3	0.1	30.3	14.2
NE	1.9	3.0	5.2	3.0	.9	.1	.1	----	14.2	9.8	2.0	2.8	4.8	2.2	.6	.1	----	----	12.5	9.3	1.4	3.1	4.7	2.2	.4	+	----	----	12.0	9.4
E	1.9	4.1	4.7	2.7	.5	.1	----	----	13.9	9.0	2.5	4.4	5.2	2.2	.4	.1	----	----	14.9	8.3	1.5	3.3	4.7	2.0	.3	----	----	----	11.8	8.8
SE	2.3	6.2	9.6	6.8	1.1	.2	----	----	26.2	10.0	2.5	6.3	9.5	6.2	.8	.1	----	----	25.3	9.6	1.7	4.4	8.8	5.8	.4	----	----	----	21.1	10.0
S	2.6	4.5	6.5	5.8	1.9	.2	+	----	21.4	10.6	2.4	5.4	7.4	6.2	1.8	.2	----	----	23.3	10.5	1.8	3.7	5.0	4.6	1.2	+	----	+	16.3	10.2
SW	2.0	3.2	1.9	1.1	.5	.2	----	----	8.8	8.2	2.0	3.4	2.2	.8	.3	.1	----	----	8.7	7.4	1.9	2.3	1.0	.6	.4	.1	----	+	6.4	6.7
W	2.5	3.9	2.8	.9	.2	.2	+	----	10.6	7.6	2.0	4.7	2.6	.7	.2	.1	+	----	10.5	7.0	2.9	4.8	3.6	1.2	.3	.1	----	----	12.9	7.4
NW	1.9	4.9	7.6	6.0	3.2	1.1	.1	----	24.8	12.1	2.2	6.2	7.1	4.7	2.9	.9	.1	----	24.0	11.1	1.9	6.8	10.0	7.8	4.5	1.7	.4	.1	33.1	12.7
Calm	2.9	----	----	----	----	----	----	----	2.9	----	3.3	----	----	----	----	----	----	----	3.3	----	3.3	----	----	----	----	----	----	----	3.3	----
Total	14.5	22.8	30.6	22.4	7.8	1.7	.2	----	147.6	10.2	15.5	25.7	31.7	19.3	6.3	1.4	.1	----	145.2	9.6	13.4	22.1	30.7	22.7	8.1	2.4	.5	.1	147.2	10.6
	October										November										December									
N	1.3	2.7	6.5	7.1	4.5	1.8	0.3	+	24.2	14.3	1.6	2.9	6.2	8.5	7.5	4.0	1.1	0.2	32.0	16.2	2.1	2.6	6.1	7.3	5.4	2.5	0.7	0.1	26.7	15.0
NE	1.7	2.3	3.2	1.0	.1	----	----	----	8.4	7.9	1.3	2.2	2.4	1.3	.3	+	----	----	7.6	8.7	2.8	2.1	1.4	.8	.2	.1	----	----	7.4	6.9
E	2.4	3.8	3.3	.7	.1	----	----	----	10.2	6.8	2.3	3.4	1.9	.4	----	----	----	----	7.9	5.8	3.9	4.6	2.4	.4	----	----	----	----	11.3	5.6
SE	2.9	6.0	9.4	5.4	.9	----	+	----	24.5	9.4	2.2	4.0	4.6	2.1	.1	----	----	----	13.0	7.7	3.6	4.7	4.7	1.7	.1	----	----	----	14.8	7.4
S	2.2	3.7	5.0	5.0	1.8	.2	+	----	18.0	11.0	1.9	2.8	3.3	2.1	.5	+	----	----	10.7	8.8	2.4	2.5	3.0	1.6	.2	----	----	----	9.7	8.0
SW	2.5	2.1	.8	.8	.5	+	----	----	6.6	7.0	2.8	2.2	1.4	.5	.1	----	+	----	6.9	6.0	3.4	2.8	1.3	.6	.2	+	+	+	8.4	6.0
W	3.5	4.3	3.2	1.0	.9	.2	+	0.1	13.3	7.7	4.3	4.1	4.0	2.3	.9	.4	.3	----	16.2	9.2	5.0	5.9	3.7	2.1	.6	.3	.1	+	17.7	7.7
NW	2.9	6.2	8.1	7.3	5.4	3.0	.8	.1	33.8	13.4	2.7	5.4	8.0	9.6	10.4	6.5	1.7	.4	44.7	16.4	3.0	5.3	6.9	8.0	6.7	3.6	1.1	.2	34.8	14.6
Calm	6.3	----	----	----	----	----	----	----	6.3	----	7.4	----	----	----	----	----	----	----	7.4	----	10.8	----	----	----	----	----	----	----	10.8	----
Total	19.9	21.0	26.8	18.1	9.5	3.7	.9	.1	145.3	10.4	20.7	18.6	21.3	17.5	12.7	7.1	1.8	.4	146.4	11.6	29.5	21.1	19.9	14.8	8.8	4.3	1.3	.2	141.6	9.5

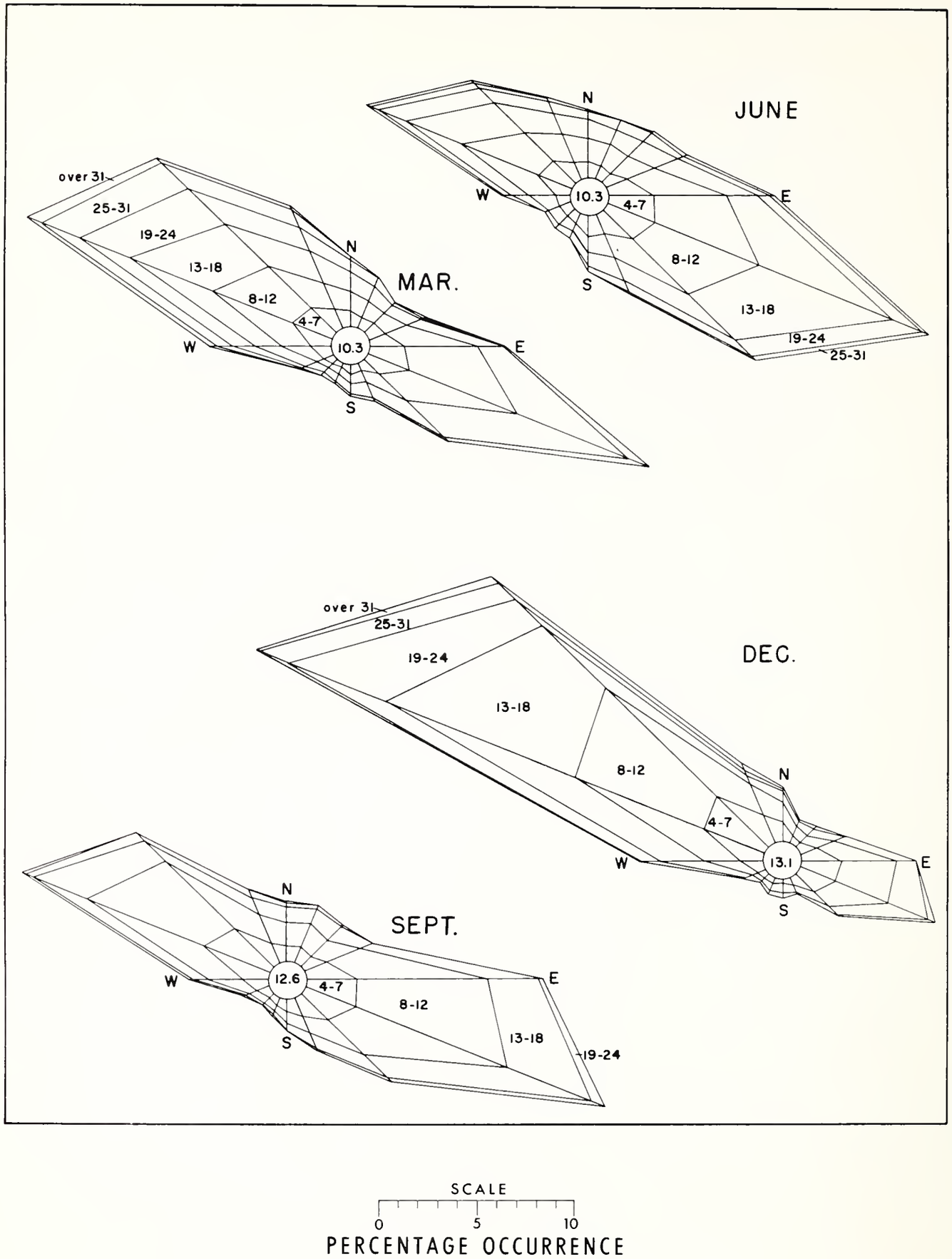


FIGURE 38.—Wind direction-speed polygons for Scottsbluff, Nebr.

TABLE 22.—*Percentage frequency of occurrence of wind classified according to direction and speed, Scottsbluff, Nebr., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.5	3.5	3.8	3.3	0.8	0.1	+	-----	12.0	10.1
NE	.6	2.6	3.1	1.7	.4	.1	-----	-----	8.5	8.7
E	1.3	5.3	8.1	4.7	.5	+	-----	-----	20.1	9.0
SE	1.4	4.3	5.6	4.7	.4	+	-----	-----	16.3	9.2
S	.4	1.1	1.2	.6	.1	-----	-----	-----	3.4	7.8
SW	.3	.7	.6	.6	.1	.1	-----	-----	2.3	8.5
W	1.2	4.9	8.0	8.4	3.7	1.3	0.2	-----	27.7	13.3
NW	1.6	8.8	14.8	12.9	5.0	1.5	.2	+	44.8	12.3
Calm	12.0	-----	-----	-----	-----	-----	-----	-----	12.0	-------
Total	16.6	20.5	30.4	23.3	6.9	1.9	.3	+	147.1	9.9

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.8	2.2	3.6	2.6	1.1	0.9	0.6	0.1	11.9	12.9
NE	.5	2.2	2.5	1.6	.7	+	-----	-----	7.5	10.8
E	1.1	5.5	7.3	6.5	.6	-----	-----	-----	21.0	9.9
SE	.9	4.3	5.6	7.4	.8	-----	-----	-----	18.9	10.6
S	.4	1.5	1.2	.9	.4	+	-----	-----	4.6	9.8
SW	.4	1.3	1.2	1.2	.3	.1	-----	-----	4.3	9.7
W	1.0	4.6	9.3	8.8	5.1	1.9	.6	.1	31.4	13.2
NW	1.4	7.2	14.3	10.6	7.0	3.8	1.7	.2	46.2	13.8
Calm	6.8	-----	-----	-----	-----	-----	-----	-----	6.8	-------
Total	10.9	19.1	29.2	24.1	10.3	4.5	1.7	.2	152.6	11.9

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.4	2.3	3.3	3.5	2.4	1.2	0.3	-----	13.4	13.7
NE	.3	2.2	2.7	2.2	.8	.1	+	-----	8.4	11.0
E	.8	5.1	10.8	8.2	1.3	.1	-----	-----	26.2	10.5
SE	.8	3.8	8.4	9.7	1.6	+	-----	-----	24.4	11.1
S	.5	1.2	1.5	1.9	.3	-----	-----	-----	5.3	11.2
SW	.3	1.0	1.2	1.4	.4	.1	-----	-----	4.4	11.5
W	.6	3.5	6.3	6.4	4.0	3.0	.9	0.3	24.9	14.8
NW	1.0	4.8	8.8	9.4	6.6	5.0	1.4	.1	37.0	15.3
Calm	7.1	-----	-----	-----	-----	-----	-----	-----	7.1	-------
Total	10.3	15.9	27.8	26.7	11.1	6.2	1.6	.3	151.1	12.6

Direction	April									
N	0.5	2.2	3.8	4.5	1.8	0.9	0.2	-----	13.9	13.7
NE	.5	1.9	3.4	4.1	1.5	.4	.1	-----	11.9	12.6
E	.8	4.5	10.5	8.7	2.3	.2	-----	-----	26.9	11.7
SE	1.0	4.0	9.6	10.9	4.6	.5	-----	-----	30.6	13.0
S	.4	1.6	2.2	2.2	1.4	.2	+	-----	8.0	12.4
SW	.4	1.4	.9	.9	.2	+	-----	-----	3.9	9.5
W	.8	3.4	6.6	4.9	2.3	1.9	1.1	0.3	21.1	13.5
NW	.8	4.7	9.9	7.3	3.9	2.9	1.4	.3	31.1	14.2
Calm	4.7	-----	-----	-----	-----	-----	-----	-----	4.7	-------
Total	8.1	15.4	30.1	27.8	11.6	5.0	1.7	.3	152.1	12.8

Direction	May									
N	0.6	2.1	3.9	3.8	1.6	0.5	0.1	-----	12.6	12.7
NE	.4	1.7	4.2	5.1	1.4	.2	.1	-----	13.0	12.8
E	.9	3.8	10.2	9.9	1.9	.3	.1	-----	26.9	12.0
SE	1.0	4.0	10.3	12.9	5.2	.9	.2	0.1	34.5	13.6
S	.6	2.3	2.7	2.4	1.4	.3	.1	-----	9.8	12.4
SW	.4	1.7	1.8	.9	.4	+	+	-----	5.2	9.8
W	.5	3.6	6.0	3.9	1.9	.8	.1	.1	16.9	12.5
NW	.7	4.5	9.1	6.8	3.3	1.4	.2	.1	26.1	13.1
Calm	5.2	-----	-----	-----	-----	-----	-----	-----	5.2	-------
Total	8.5	15.6	31.3	29.3	11.5	3.0	.6	.2	150.2	12.1

Direction	June									
N	0.9	2.4	4.1	2.8	1.6	0.3	0.1	-----	12.1	11.5
NE	.6	2.4	4.1	3.2	1.5	.3	+	-----	12.0	12.0
E	.9	6.0	10.9	10.1	2.5	.7	.1	-----	31.3	11.8
SE	1.4	5.7	11.0	11.8	3.4	.6	.2	-----	33.9	12.2
S	.7	2.8	2.6	2.3	.9	.1	-----	-----	9.3	10.7
SW	.4	1.8	1.6	.9	.1	-----	-----	-----	4.8	9.3
W	.9	3.2	6.2	4.1	1.9	.5	.2	+	17.0	12.1
NW	1.2	4.3	7.8	6.2	3.3	.9	.4	0.1	24.3	12.6
Calm	5.6	-----	-----	-----	-----	-----	-----	-----	5.6	-------
Total	10.3	19.2	31.6	26.1	9.9	2.2	.7	.1	150.3	11.3

Direction	July									
N	0.7	3.1	3.6	3.0	0.9	0.2	+	-----	11.6	11.0
NE	.8	2.7	4.0	2.8	.9	.2	-----	-----	11.5	10.6
E	1.2	7.7	16.4	8.5	.5	.1	-----	-----	34.4	10.1
SE	1.3	7.6	15.7	10.3	1.8	.3	-----	-----	37.0	10.8
S	.8	3.3	3.2	2.1	.6	.1	-----	-----	10.0	9.8
SW	.5	2.0	1.6	.3	.2	+	-----	+	4.7	8.3
W	1.0	4.1	6.7	1.8	.5	+	-----	-----	14.1	9.1
NW	1.2	5.4	8.5	3.5	1.0	.2	-----	-----	19.8	10.0
Calm	6.0	-----	-----	-----	-----	-----	-----	-----	6.0	-------
Total	10.9	24.1	39.3	20.3	4.5	.8	+	+	149.1	9.6

Direction	August									
N	0.9	2.8	3.5	2.1	0.5	+	0.1	-----	9.9	9.9
NE	.8	2.7	4.8	2.4	.5	0.1	-----	-----	11.2	10.0
E	1.1	7.8	19.7	9.0	.7	-----	-----	-----	38.3	10.1
SE	.9	7.6	13.0	8.5	1.1	+	-----	-----	31.1	10.3
S	.5	3.2	2.1	1.8	.3	+	-----	-----	8.0	9.7
SW	.5	2.1	1.5	.3	.1	+	-----	-----	4.5	7.5
W	.8	4.9	7.5	2.8	.5	+	-----	-----	16.6	9.4
NW	1.3	5.8	8.8	4.0	1.1	.2	.1	-----	21.1	9.9
Calm	7.4	-----	-----	-----	-----	-----	-----	-----	7.4	-------
Total	12.2	24.4	40.0	19.8	3.3	.3	.1	-----	148.1	9.2

Direction	September									
N	0.9	2.8	4.1	2.6	0.9	0.2	-----	-----	11.4	10.4
NE	.7	2.7	4.3	2.6	.4	.1	-----	-----	10.8	9.8
E	1.4	6.4	16.8	7.9	1.0	.1	-----	-----	33.6	10.1
SE	1.4	5.6	11.8	7.2	1.0	.1	-----	-----	27.1	10.3
S	.4	2.0	1.8	1.5	.2	+	-----	-----	6.0	9.1
SW	.2	1.4	1.1	.5	.2	-----	-----	-----	3.3	8.3
W	1.5	5.6	8.4	4.0	.7	.2	-----	-----	20.4	9.6
NW	2.3	7.5	12.9	5.5	1.5	.3	-----	-----	29.9	9.8
Calm	6.7	-----	-----	-----	-----	-----	-----	-----	6.7	-------
Total	12.6	22.4	40.2	20.4	3.8	.6	-----	-----	149.2	9.3

Direction	October									
N	0.6	2.5	3.0	2.1	0.8	0.2	-----	-----	9.3	10.4
NE	.8	2.4	2.5	1.9	.3	.1	-----	-----	8.0	9.6
E	1.1	5.8	13.8	7.4	.5	+	-----	-----	28.7	10.2
SE	.7	4.3	10.8	8.6	1.2	.1	-----	-----	25.7	10.9
S	.3	1.4	1.5	1.0	.2	-----	-----	-----	4.4	9.2
SW	.3	1.0	.9	.3	.1	.1	-----	-----	2.6	8.4
W	.9	4.9	8.1	6.7	3.0	.9	0.3	+	24.9	12.2
NW	1.2	6.2	12.1	9.5	4.9	1.6	.4	0.1	36.0	12.6
Calm	8.8	-----	-----	-----	-----	-----	-----	-----	8.8	-------
Total	12.7	19.2	34.4	23.3	7.6	2.2	.5	.1	148.4	10.5

Direction	November									
N	0.5	2.2	3.8	2.2	1.3	0.4	+	+	10.4	12.0
NE	.6	1.6	2.1	.7	.1	+	-----	-----	5.1	8.5
E	.9	3.8	7.8	3.6	.6	+	-----	-----	16.8	9.8
SE	.7	2.5	5.0	4.1	.7	-----	-----	-----	12.9	10.7
S	.3	.9	.9	.7	.1	-----	-----	-----	2.9	9.5
SW	.4	.8	.9	.5	.3	.1	-----	-----	2.9	9.0
W	.7	4.6	11.4	11.8	4.4	1.9	0.3	0.1	35.1	13.7
NW	.8	7.3	17.4	17.0	8.3	3.9	.8	.1	55.6	14.3
Calm	6.4	-----	-----	-----	-----	-----	-----	-----	6.4	-------
Total	9.5	16.3	32.1	25.9	10.8	4.4	.8	.1	148.1	12.0

Direction	December									
N	0.5	2.9	3.2	1.4	0.5	0.4	0.1	+	9.1	9.6
NE	.5	1.7	2.1	1.4	.3	-----	-----	-----	6.0	9.2
E	.6	4.7	6.7	3.7	.5	-----	-----	-----	16.2	9.7
SE	.8	3.6	4.4	2.8	.5	-----	-----	-----	12.0	9.7
S	.5	.9	1.2	.6	-----	-----	-----	-----	3.2	8.1
SW	.4	1.0	.9	.8	.1	+	-----	-----	3.2	8.8
W	.7	4.9	9.0	12.9	6.2	1.9	.2	0.1	35.8	13.7
NW	1.2	8.5	16.6	15.3	7.4	3.0	.6	.2	53.0	13.3
Calm	9.3	-----	-----	-----	-----	-----	-----	-----	9.3	-------
Total	13.1	19.2	29.9	24.3	9.3	3.4	.6	.2	147.8	11.1

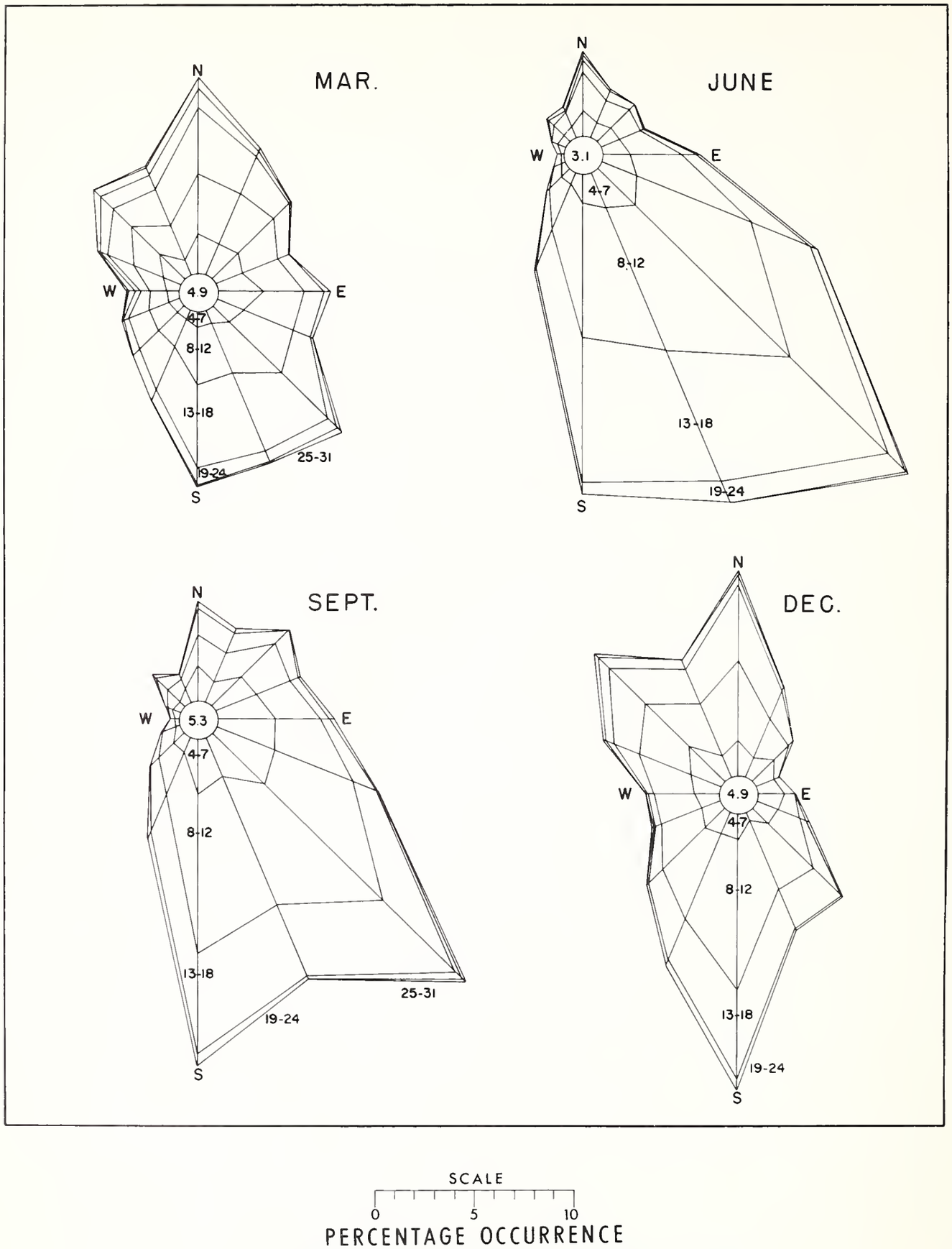


FIGURE 39.—Wind direction-speed polygons for Wichita Falls, Tex.

TABLE 23.—*Percentage frequency of occurrence of wind classified according to direction and speed, Wichita Falls, Tex., January 1954 to December 1958*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	1.1	6.9	9.3	7.4	1.4	0.2	----	----	26.3	10.4
NE	0.5	5.7	5.4	3.0	.3	+	----	----	14.8	8.8
E	.2	5.5	4.6	1.7	.1	----	----	----	12.1	7.9
SE	.3	5.4	9.8	4.5	.3	----	----	----	20.2	9.6
S	.3	4.8	12.5	7.1	.8	----	----	----	25.5	10.6
SW	.3	3.5	6.2	3.8	.7	----	----	----	14.4	10.4
W	.3	3.9	3.6	1.0	.1	+	----	----	8.8	8.3
NW	1.0	6.6	5.8	2.7	.9	.2	----	----	17.2	9.7
Calm	3.8	----	----	----	----	----	----	----	3.8	----
Total	6.3	29.1	39.4	21.7	3.1	.3	----	----	143.1	9.5

Direction	February									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.4	7.2	8.8	5.7	2.0	0.4	----	+	24.5	10.9
NE	.4	7.3	5.8	2.3	.2	----	----	----	16.0	8.4
E	.6	5.7	4.3	1.0	.1	----	----	----	11.7	7.7
SE	.3	5.1	8.2	6.4	1.2	.1	----	----	21.2	10.8
S	.1	3.2	8.6	8.5	2.0	.1	----	----	22.5	12.2
SW	.2	2.7	4.8	4.4	1.2	.1	0.1	----	13.5	11.6
W	.3	3.1	3.8	2.1	1.2	.5	.3	+	11.2	11.4
NW	.3	6.1	6.0	4.6	2.3	.9	.2	0.1	20.5	11.6
Calm	2.9	----	----	----	----	----	----	----	2.9	----
Total	4.8	28.0	34.7	23.9	6.7	1.4	.4	.1	144.0	10.6

Direction	March									
	Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	0.3	4.5	7.9	7.4	2.1	1.2	0.1	----	23.5	12.8
NE	.3	5.0	7.2	3.9	.4	.2	----	----	17.0	9.9
E	.5	5.1	6.6	2.5	.4	+	----	----	15.2	9.4
SE	.2	3.3	9.2	8.4	1.4	.4	+	----	22.9	12.0
S	.1	2.0	7.2	11.0	2.2	.1	----	----	22.5	12.9
SW	.2	1.6	3.8	4.8	1.3	.2	----	----	12.0	12.1
W	.2	2.1	3.5	3.0	1.1	.6	.1	----	10.5	12.0
NW	.4	3.5	5.6	4.8	2.1	.9	.1	----	17.3	12.7
Calm	3.4	----	----	----	----	----	----	----	3.4	----
Total	4.9	19.0	34.7	30.9	7.7	2.6	.2	----	144.3	11.6

Direction	April									
N	0.1	2.9	6.0	4.1	1.8	0.3	----	----	15.2	12.2
NE	.1	3.9	7.0	4.2	1.0	.1	----	----	16.4	10.7
E	.2	4.8	6.8	3.2	.5	.1	+	----	15.6	9.7
SE	.2	3.6	12.2	12.8	3.2	.4	0.1	----	32.5	12.7
S	.1	2.0	10.8	13.0	3.5	.3	+	----	29.8	13.4
SW	.3	1.4	4.1	3.4	.9	.3	----	----	10.3	12.6
W	+	1.8	3.7	2.2	1.3	.3	----	----	9.3	12.2
NW	.1	3.0	4.2	3.7	2.2	.3	----	----	13.6	12.3
Calm	2.3	----	----	----	----	----	----	----	2.3	----
Total	3.2	15.9	37.2	32.5	9.8	1.4	.1	----	145.0	12.0

Direction	May									
N	0.2	3.0	5.3	3.4	0.2	----	+	----	12.1	10.2
NE	.2	3.1	6.0	2.6	.2	+	+	----	12.1	10.0
E	.3	4.7	8.6	4.1	.9	0.3	+	----	19.0	10.2
SE	.3	5.5	17.9	13.1	3.2	.5	+	----	40.6	11.6
S	.2	3.7	13.5	12.6	2.6	.1	----	----	32.6	11.9
SW	.1	1.9	4.0	2.8	.2	----	----	----	9.1	10.4
W	+	1.8	2.3	.7	.1	----	----	----	4.9	8.8
NW	.1	3.2	4.2	2.4	.3	.1	----	----	10.3	9.7
Calm	3.4	----	----	----	----	----	----	----	3.4	----
Total	4.4	18.7	42.6	28.2	5.3	.8	0.1	----	144.1	10.7

Direction	June									
N	0.1	2.7	4.0	1.3	0.5	0.1	----	+	8.7	9.9
NE	.1	2.6	3.5	1.1	.2	----	----	----	7.6	9.2
E	.3	4.0	9.9	4.1	.8	+	----	----	19.1	9.9
SE	.1	6.2	25.1	17.4	3.0	.1	----	----	51.9	11.6
S	.1	4.1	17.2	16.7	1.9	----	----	----	40.0	12.2
SW	.1	1.6	3.6	2.3	.2	----	----	----	7.7	10.7
W	.1	.5	.9	.3	.1	+	----	----	1.9	8.5
NW	.3	1.1	2.0	.7	.3	.1	----	----	4.6	9.3
Calm	2.1	----	----	----	----	----	----	----	2.1	----
Total	3.0	15.9	45.7	30.3	4.8	.3	----	----	143.6	11.1

Direction	July									
N	0.1	1.2	1.3	0.8	0.2	+	----	----	3.6	8.7
NE	.3	2.3	2.6	1.3	.2	----	----	----	6.7	8.9
E	.4	5.2	7.9	2.8	.3	----	----	----	16.6	9.0
SE	.2	5.6	23.4	12.0	.9	+	----	----	42.1	10.8
S	.1	5.9	25.6	14.5	1.2	0.1	----	----	47.3	11.0
SW	+	3.1	8.2	3.7	.3	----	----	----	15.4	10.5
W	+	1.3	1.7	.3	+	+	+	----	3.4	9.2
NW	.1	1.3	1.0	.5	.1	+	+	----	3.1	9.4
Calm	3.4	----	----	----	----	----	----	----	3.4	----
Total	4.2	18.3	50.0	25.2	2.1	.1	+	----	141.6	10.1

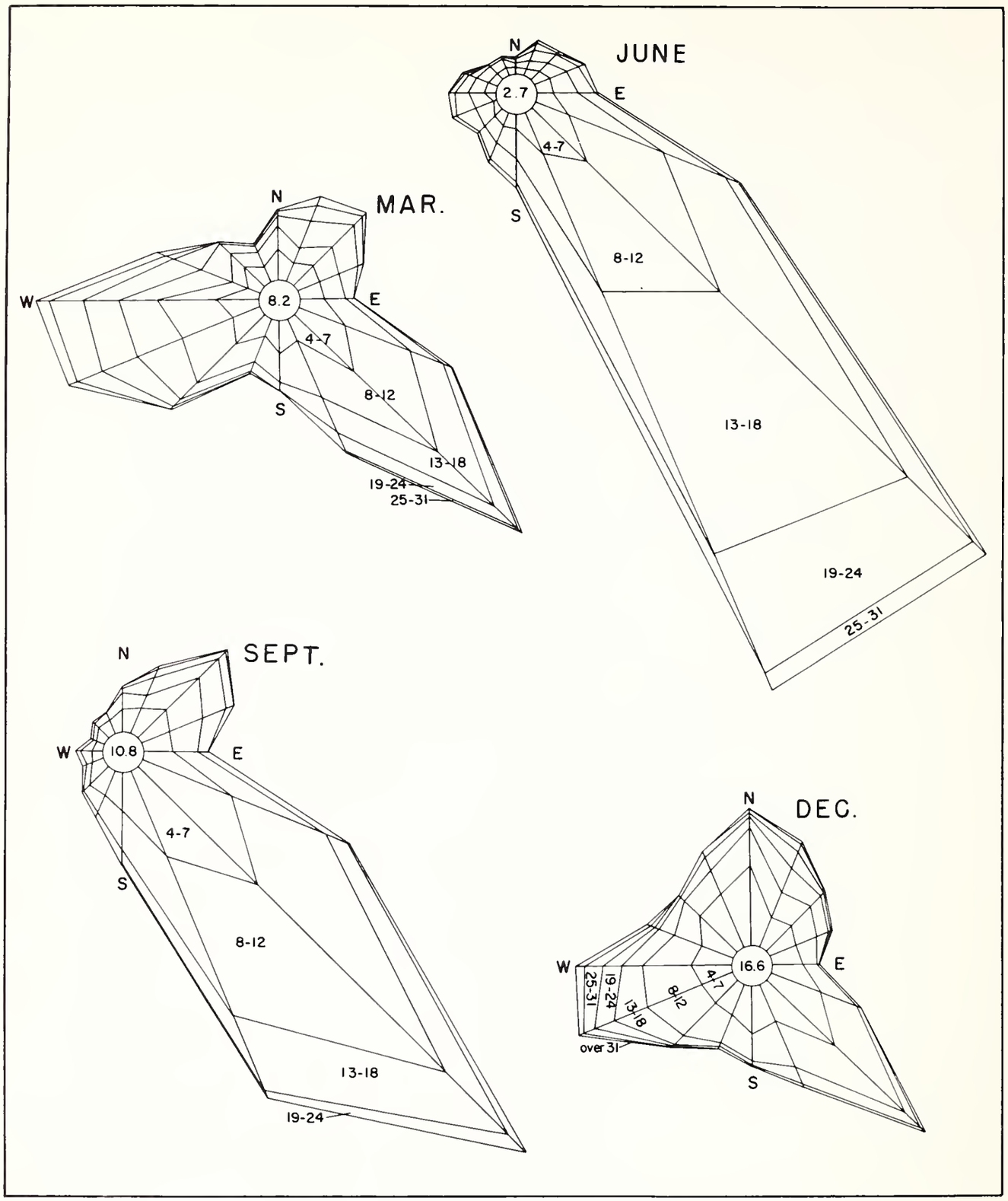
Direction	August									
N	0.2	2.7	3.8	1.8	0.2	+	----	----	8.8	9.7
NE	.1	4.0	5.0	2.0	.2	----	----	----	11.3	9.5
E	.2	5.9	8.9	2.8	.5	----	----	----	18.4	9.7
SE	.4	8.4	22.8	8.5	.8	0.1	----	----	40.9	10.1
S	.3	6.2	23.9	10.9	.5	+	----	+	41.9	10.3
SW	.1	2.7	6.5	4.0	.2	+	----	+	13.6	10.2
W	----	.9	1.2	.5	.1	----	----	----	2.7	8.9
NW	.1	1.5	.9	.4	+	+	----	----	2.9	7.9
Calm	2.0	----	----	----	----	----	----	----	2.0	----
Total	2.8	22.7	50.9	21.5	1.7	.1	----	+	142.5	9.8

Direction	September									
N	0.5	3.6	3.7	2.8	0.5	0.1	----	----	11.2	10.3
NE	.5	5.4	5.8	2.6	.4	+	----	----	14.6	9.4
E	.3	8.1	8.3	2.3	.3	.1	----	----	19.4	8.8
SE	.1	8.8	19.8	10.3	.8	.1	----	----	39.9	10.3
S	.1	5.7	17.5	11.0	1.1	----	----	----	35.4	11.0
SW	----	1.7	3.9	2.8	.4	----	----	----	8.8	10.8
W	----	.8	1.1	.2	.1	----	----	----	2.1	9.3
NW	.4	1.9	1.6	.6	+	----	----	----	4.4	8.6
Calm	4.0	----	----	----	----	----	----	----	4.0	----
Total	5.3	25.4	43.2	23.3	2.6	.3	----	----	139.8	9.8

Direction	October									
N	0.3	6.6	5.5	3.3	0.5	0.1	----	----	16.3	9.7
NE	.3	5.5	3.9	1.1	.2	.1	----	----	11.0	8.2
E	.3	6.2	4.9	1.1	.1	----	----	----	12.6	8.0
SE	.1	7.9	17.3	5.0	.6	.1	----	----	31.0	9.6
S	.2	7.2	18.4	8.7	1.2	.1	----	----	35.7	10.5
SW	.3	3.6	4.6	2.6	.2	+	----	----	11.4	9.5
W	.4	3.5	2.4	.5	.2	----	----	----	7.0	7.8
NW	.6	4.9	4.3	2.2	.6	.1	----	----	12.7	9.3
Calm	4.5	----	----	----	----	----	----	----	4.5	----
Total	6.1	31.3	42.7	17.1	2.5	.3	----	----	142.2	9.1

Direction	November									
N	0.4	4.4	7.5	6.0	1.8	0.2	0.1	----	20.3	11.6
NE	.3	3.4	4.7	3.1	.6	+	----	----	12.1	10.4
E	.3	3.1	3.2	1.0	.4	----	----	----	8.0	8.4
SE	.3	3.5	9.3	4.8	.7	----	+	----	18.5	10.4
S	.4	4.7	17.4	9.6	1.1	----	+	----	33.1	11.0
SW	.2	3.3	8.9	5.3	.5	+	----	----	18.3	10.7
W	.4	4.4	3.9	2.4	.2	.1	----	----	11.4	9.4
NW	.3	5.0	6.3	4.8	1.3	.1	----	----	17.7	10.6
Calm	3.9	----	----	----	----	----	----	----	3.9	----
Total	5.8	22.1	41.5	25.6	4.6	.3	.1	----	143.3	10.3

Direction	December									
N	0.2	4.2	9.2	7.3	1.3	0.1	0.1	----	22.4	10.9
NE	.3	3.4	3.5	2.0	.2	+	----	----	9.5	8.8
E	.5	3.3	2.0	.3	.2	----	----	----	6.2	6.8
SE	.2	2.6	8.3	4.4	.3	.1	----	----	15.9	10.3
S	.1	2.9	16.2	9.0	1.0	+	----	----	29.2	11.4
SW	.1	3.6	9.9	3.7	.4	.1	----	----	17.9	10.4
W	.4	4.0	7.0	2.0	.5	.2	----	----	14.2	9.9
NW	.5	5.4	8.7	6.0	1.8	.5	+	----	22.8	11.3
Calm	3.4	----	----	----	----	----	----	----	3.4	----
Total	4.9	20.9	44.7	24.7	4.0	.7	.1	----	141.5	10.3



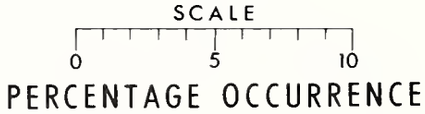


FIGURE 40.—Wind direction-speed polygons for Wink, Tex.

TABLE 24.—*Percentage frequency of occurrence of wind classified according to direction and speed, Wink, Tex., November 1949 to October 1954*

[The symbol, +, indicates occurrence of more than 0 but less than 0.05 percent. Values are to nearest 0.1 percent, not adjusted to make their sums equal to total percentages]

Direction	January										February										March									
	Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—										Frequency of windspeed (m.p.h.) of—									
	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed	0–3	4–7	8–12	13–18	19–24	25–31	32–38	Over 38	Total	Average speed
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*M.p.h.*
N	4.0	8.4	4.5	1.6	0.8	0.3	0.1	0.1	19.8	7.7	3.2	7.7	3.8	3.0	1.9	1.0	0.3	0.2	21.0	10.4	1.3	3.3	2.8	2.2	1.1	0.6	+	-----	11.2	10.7
NE	2.5	5.5	4.6	2.4	1.0	.2	+	-----	16.2	8.9	2.1	4.3	2.7	2.9	1.7	.7	.1	+	14.4	10.9	1.4	3.4	3.1	3.9	1.7	.7	0.1	-----	14.2	11.8
E	2.2	5.1	4.3	1.7	.1	-----	-----	-----	13.5	7.7	1.6	5.1	4.0	1.6	.5	+	-----	-----	12.9	8.3	.9	4.6	5.3	3.1	.7	+	-----	-----	14.5	9.7
SE	2.5	9.7	8.7	2.1	.5	+	-----	-----	23.5	7.8	1.9	8.6	9.5	4.4	1.0	.1	-----	-----	25.6	9.2	1.6	7.4	11.8	7.4	2.9	.3	-----	-----	31.4	10.9
S	1.9	5.9	5.1	.9	.4	.2	-----	-----	14.2	7.6	1.3	5.1	4.3	1.7	.3	.1	-----	-----	12.7	8.4	1.3	3.7	5.7	2.8	1.1	.1	-----	-----	14.8	10.0
SW	1.5	4.6	7.1	2.9	2.0	1.0	.1	-----	19.2	11.4	1.4	5.6	5.5	3.3	1.6	.6	.1	+	18.1	10.7	.9	4.3	6.5	4.0	2.4	1.5	.3	0.1	19.9	12.9
W	1.2	3.9	6.9	4.6	2.7	1.5	.3	+	21.1	13.0	1.4	4.7	6.3	4.9	2.9	1.8	.6	.3	22.8	13.5	.8	4.0	6.2	5.7	4.9	3.2	1.0	.4	26.2	16.1
NW	2.2	5.0	3.0	1.8	.8	.2	.1	+	13.1	8.8	2.1	5.5	3.4	2.1	.9	.7	.4	.3	15.3	10.6	.9	2.8	2.5	2.5	1.6	.5	.3	.2	11.2	13.3
Calm	2.2	-----	-----	-----	-----	-----	-----	-----	2.2	-----	1.3	-----	-----	-----	-----	-----	-----	-----	1.3	-----	1.4	-----	-----	-----	-----	-----	-----	-----	1.4	-----
Total	15.3	34.4	30.6	11.9	5.1	2.1	.5	-----	142.8	8.8	12.3	32.7	28.0	15.9	6.8	3.1	.8	.5	144.1	10.0	8.2	24.2	30.2	20.9	10.5	4.6	1.1	.4	144.8	11.7
	April										May										June									
N	0.7	3.0	3.3	2.0	1.0	0.6	0.2	0.1	10.9	11.8	0.9	3.4	4.1	3.0	1.6	0.4	0.1	+	13.4	11.6	0.4	1.0	1.1	0.9	0.5	0.1	-----	+	4.1	11.5
NE	.9	3.4	4.1	3.7	1.8	.7	.4	.2	15.1	13.1	1.1	3.0	4.9	4.4	1.7	.7	1	+	15.9	12.3	.4	1.5	2.0	1.8	.8	.2	-----	+	6.7	11.8
E	.8	4.8	7.3	3.8	.8	.1	+	+	17.6	10.2	1.3	4.0	6.2	3.5	.9	.4	.1	-----	16.5	10.5	.6	3.0	6.9	4.6	1.1	.2	-----	+	16.5	11.4
SE	1.4	8.4	14.1	11.1	3.3	.4	-----	-----	38.7	11.4	1.1	7.6	16.8	12.8	4.1	1.1	.3	+	43.9	12.3	.8	7.3	20.9	29.7	11.3	1.7	-----	-----	71.7	13.9
S	1.2	5.1	7.7	5.6	1.4	.2	+	-----	21.1	10.8	.5	3.7	8.8	7.6	2.6	.5	.1	+	23.9	12.5	.4	3.6	9.6	15.6	6.8	.7	-----	-----	36.6	14.2
SW	.5	3.1	5.5	2.9	1.5	.4	.1	-----	14.0	11.6	.6	3.4	4.3	3.2	.8	.7	.1	-----	13.0	11.4	.2	1.4	2.5	2.2	.6	.1	+	-----	6.9	11.7
W	.5	3.3	6.0	4.3	3.7	1.9	.7	.1	20.3	14.8	.4	2.7	4.9	3.4	1.6	1.1	.1	0.1	14.2	13.1	.2	1.3	2.2	2.1	.8	.1	-----	-----	6.7	12.2
NW	.6	3.1	3.4	2.3	1.8	.9	.5	+	12.5	13.3	.6	3.1	3.7	1.5	.6	.3	-----	.1	9.9	10.2	.2	1.3	1.6	.7	.3	.1	-----	-----	4.0	10.1
Calm	.8	-----	-----	-----	-----	-----	-----	-----	.8	-----	1.2	-----	-----	-----	-----	-----	-----	-----	1.2	-----	.4	-----	-----	-----	-----	-----	-----	-----	.4	-----
Total	5.5	22.8	34.2	22.9	9.8	3.4	1.2	.3	151.0	11.8	5.6	21.5	35.5	24.9	8.8	3.1	.5	.1	151.9	11.6	2.7	13.8	30.5	37.1	13.8	2.1	+	.1	153.6	13.1
	July										August										September									
N	0.8	1.5	1.2	0.6	0.4	0.1	-----	+	4.5	9.1	0.6	2.3	1.7	0.6	0.2	+	-----	-----	5.5	8.1	1.4	3.2	1.9	1.2	0.6	0.1	0.1	+	8.4	8.9
NE	1.0	3.0	3.0	2.6	.8	.2	+	-----	10.5	10.4	1.3	3.8	3.6	1.4	.3	0.1	-----	-----	10.5	8.6	1.6	4.6	4.7	3.4	1.4	.2	.1	+	15.9	10.3
E	1.6	6.6	8.3	4.4	1.0	.1	-----	-----	22.1	9.6	1.6	7.2	8.7	3.2	0.5	.1	+	-----	21.3	9.0	1.8	8.3	7.8	2.8	.5	+	-----	-----	21.1	8.4
SE	1.9	12.8	26.5	20.1	4.8	.5	-----	-----	66.6	11.5	2.9	15.9	28.6	13.8	1.8	.1	+	-----	63.2	9.9	2.8	17.0	25.7	9.8	1.6	.2	+	-----	57.0	9.4
S	.8	6.0	13.0	11.0	2.3	.2	-----	-----	33.3	11.7	1.3	7.4	13.3	7.4	1.2	.1	-----	-----	30.6	10.3	1.3	7.6	11.1	4.9	.5	+	-----	-----	25.5	9.4
SW	.6	2.3	2.4	.9	.1	+	-----	-----	6.4	8.5	.8	2.2	3.0	1.1	.3	+	-----	-----	7.4	9.0	.7	3.3	1.8	.6	+	-----	-----	-----	6.4	7.3
W	.4	1.1	.9	.4	.1	-----	-----	-----	2.9	8.4	.6	1.3	1.7	.6	.1	-----	-----	-----	4.3	8.4	.4	1.4	1.3	.5	+	-----	-----	-----	3.7	8.0
NW	.6	1.1	.6	.2	+	+	-----	-----	2.7	6.9	.4	1.5	.8	.3	.1	-----	-----	-----	3.0	7.5	.9	1.8	.9	.2	+	-----	-----	-----	3.8	6.3
Calm	1.8	-----	-----	-----	-----	-----	-----	-----	1.8	-----	2.4	-----	-----	-----	-----	-----	-----	-----	2.4	-----	2.8	-----	-----	-----	-----	-----	-----	-----	2.8	-----
Total	7.1	23.6	36.4	25.9	6.2	.8	+	+	150.8	10.5	9.3	28.1	41.1	18.3	2.9	.2	+	-----	148.2	9.2	10.8	32.4	37.6	15.6	3.2	.3	.1	+	144.6	8.8
	October										November										December									
N	3.0	5.6	3.0	1.5	0.7	0.2	+	-----	14.0	7.9	3.9	9.8	5.5	1.9	0.7	0.3	0.1	-----	22.1	7.7	3.9	9.1	4.4	2.5	1.2	0.6	0.1	-----	21.9	8.4
NE	2.6	5.3	3.9	3.3	1.2	.3	0.1	-----	16.8	9.6	2.7	5.3	4.8	2.6	1.1	.4	.1	-----	17.0	9.4	2.6	4.5	3.7	2.6	1.0	.6	.1	-----	15.2	9.7
E	2.4	7.3	5.6	2.6	.4	.1	-----	-----	18.4	8.0	2.3	5.8	3.3	1.3	.1	+	-----	-----	12.7	7.1	2.6	5.2	3.6	.9	.1	.1	-----	-----	12.5	6.9
SE	4.6	15.7	20.1	8.1	1.6	.2	-----	-----	50.2	8.9	4.4	11.6	8.8	2.4	.3	+	-----	-----	27.6	7.3	3.1	9.0	9.0	2.1	.5	-----	-----	-----	23.6	7.8
S	1.7	6.3	7.8	2.9	.6	.1	-----	-----	19.4	8.9	2.6	6.2	4.6	1.1	.2	+	-----	-----	14.8	7.1	1.8	5.8	5.1	1.3	.3	-----	-----	-----	14.3	7.9
SW	1.3	3.1	2.3	.5	.2	.1	-----	-----	7.4	7.3	1.8	4.3	5.0	2.5	.8	.4	.1	+	14.9	9.8	1.3	4.7	6.3	2.5	1.2	.8	.1	0.1	17.0	10.8
W	1.0	2.1	1.3	.8	.3	.1	-----	-----	5.5	8.2	1.9	3.0	4.2	2.8	1.4	.9	.3	0.2	14.6	12.1	.7	5.1	6.6	3.5	2.2	1.7	.5	.3	20.6	13.2
NW	1.3	2.5	.9	.3	.1	-----	-----	-----	5.1	6.2	3.0	5.6	2.9	1.1	.6	.2	+	-----	13.4	7.5	2.7	6.9	3.7	1.9	.6	.2	.1	.1	16.2	8.3
Calm	4.1	-----	-----	-----	-----	-----	-----	-----	4.1	-----	4.1	-----	-----	-----	-----	-----	-----	-----	4.1	-----	3.1	-----	-----	-----	-----	-----	-----	-----	3.1	-----
Total	17.1	33.9	31.8	13.3	3.3	.5	.1	-----	140.9	8.1	20.3	36.1	27.6	10.5	3.3	1.7	.4	.2	141.2	8.0	16.6	35.5	28.9	10.9	4.7	2.6	.6	.3	144.4	8.7

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